

# THE IRON AGE

THURSDAY, AUGUST 22, 1889.

## U. S. Steam Whale-Boat.

In our issue of July 4 we presented drawings showing the engines and part of the hull arrangement of the United States gun-boats Concord and Bennington, which may be said to belong to the "middle line" of boats being built for the Government, as regards size and power. In this issue we present drawings of one extreme as regards size and power—namely, the machinery for the 28-foot steam whale-

valve is cast in one piece, with a central hole of sufficient size for the live steam of the lower port. The face of the low-pressure valve is recessed at each end, and the recess fitted with babbitt-metal, which is turned accurately to the same diameter as the valve. The valve-stems are of forged steel, finished all over. At both the top and bottom of each cylinder is a water-valve fitted with springs and screws for adjusting the loads on the valves. The valves on the high-

Each cylinder is supported on two cast-iron frames of T-section, the upper part of each frame on the inside being accurately planed parallel to the axes of the cylinder in order to form the cross-head guides. The valve-gear is that known as Marshal's, the eccentric rod and strap being made of phosphor bronze, and all the connecting links and pins of forged steel. All the bearings of the valve-gears are fitted with composition cushions, formed so as to be

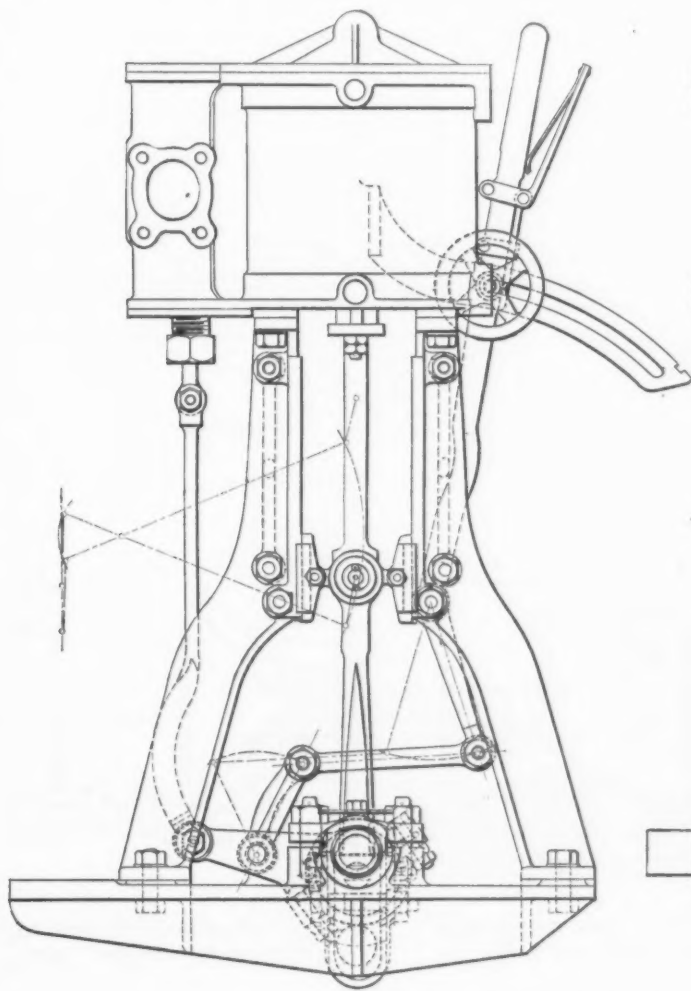


Fig. 1.—End Elevation.

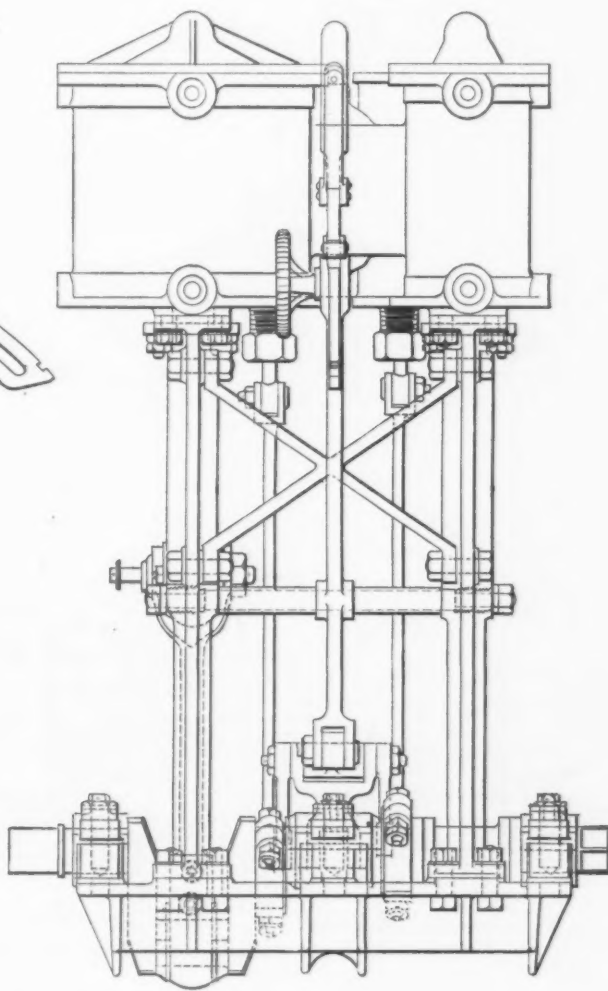


Fig. 2.—Front Elevation.

## COMPOUND ENGINES FOR U. S. STEAM WHALE-BOAT.

boats. The arrangement of the engine and boiler and the water-tanks and coal-bunkers is shown in the plan view, Fig. 8. The boiler is placed forward of the engine, the center line of the latter being 7 inches to port, and that of the boiler 2 inches to starboard of the center line of the boat.

The engine is of the vertical, inverted cylinder, direct-acting compound type, with a high-pressure cylinder of 8 inches diameter, the stroke being 5 inches and the cranks being set at 90 degrees. The cylinders are of cast-iron, made in one piece, which includes the valve-chest, steam-ports and passages. The valves are of the piston type, and are made of composition accurately turned to fit the bore of the valve-chest. The high-pressure

pressure cylinder are set to blow off at 160-pounds pressure; those on the low pressure at 100 pounds. The pistons are solid, made of cast-iron in dish form, and are turned to fit the cylinders. The high-pressure piston has three grooves for water-packing, and there is a groove at the periphery of the low-pressure piston for packing rings, which are made of cast-iron, turned, cut and sprung into place. The piston-rods are of forged steel, finished all over, fitted with a shoulder at the upper end, which is threaded and screwed into the piston and secured by split pins. The cross-head is forged on the lower end, which is also bolted and fitted with a composition bushing for the cross-head pin. The connecting-rods are also of forged steel, forked at the upper ends, and fitted for the cross-head pin.

easily replaced. The eccentrics are of forged steel, forged with the crank-shafts and set with the cranks. The reversing-gear consists of a reversing-lever, fitted with a quadrant and locomotive catch. The reversing-lever is connected to the valve-gear by links. The stops on the quadrant are so placed that the lever can only be moved such a distance as will throw the fixed end of the radius link 27 degrees on each side of the perpendicular, midway between its two extreme positions. The reversing-lever is pivoted on the horizontal tie-rod, as shown in the end elevation. The crank-shaft is made of forged steel, in one section. The thrust-shaft is of steel, while the propeller-shaft is made of Vesuvius metal. The screw propeller is made of composition as follows: 88 parts of copper, 10 parts of tin and 2

parts of zinc. Its diameter is 20 inches; pitch, 24 inches; 4 blades. There is a coil condenser made of copper pipe, Nos. 14 and 16, B. W. G., for the large and small diameters respectively, the pipe being tinned on the inside. There is one vertical single-acting air-pump bolted to the engine body-plate and worked by links from the low-pressure cross-head. There is one feed-water tank on each side of the stern sheets, fitted under the thwarts, and one under the boiler. The filter is on the port side of the machinery space.

The boiler is a Ward boiler of the "A" special type, placed forward of the engine and fitted to work on the closed ash-pan system of forced draft. It is fitted with safety-valve, steam and water gauges, &c. A Blake's vertical feed-pump, size 0, is placed on the port side of the engine

constructed entirely of steel boiler-plates riveted together. The idea of the inventor is to so construct a car that it will not burn up and will not go to pieces in a collision.

#### The New Steamer Teutonic.

The White Star Company's new steamer Teutonic proves to be very fast, but she did not quite equal the speed of the City of New York, which started on the trip out from England at the same time. The Teutonic is a new type of steamer. She is the first merchant ship built in compliance with the conditions of the British Admiralty, so that in case of emergency she may be used as a war-ship. The vessel has twin screws, and was built at Belfast by Messrs. Harland & Wolff for Messrs. Ismay, Imrie & Co., of the White Star

line. The Teutonic carries only two masts and three funnels. The poles, however, carry no yards, as it is believed her engines are strong enough to propel her in any weather without the aid of square sails.

In accordance with the Admiralty requirements, all the machinery has been placed below the water-line. The boilers are 12 in number. Some are 12 feet and some are 12 feet 6 inches in diameter and 17 feet long, with six furnaces in each and a grate area of 1163 feet. The twin propellers, which are 21 feet 6 inches in diameter with a pitch of 28 feet 6 inches and a superficial area of 128 feet, are especially interesting on account of the unusual manner in which they are placed. They overlap each other to the extent of 5 feet 6 inches; or, in other words, they each extend over the central line 2 feet 9 inches.

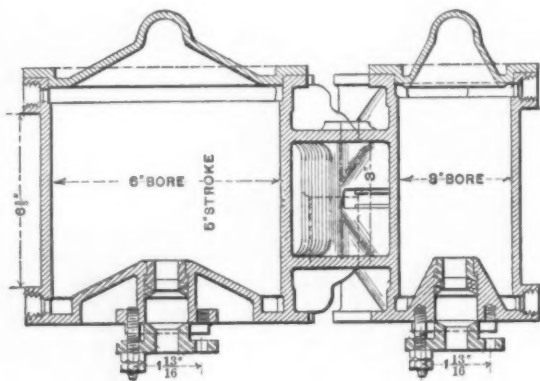


Fig. 3.—Vertical Section through Cylinders.

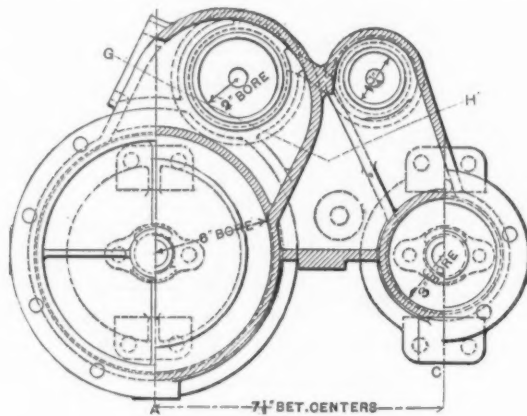


Fig. 4.—Sectional Plan of Cylinders.

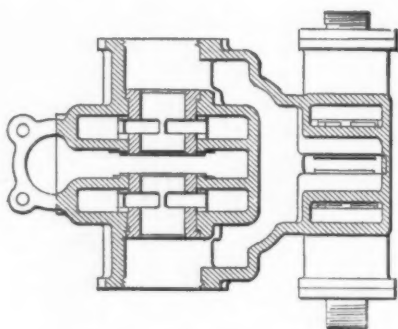


Fig. 5.—Section through Valves on Line G H, Fig. 4.

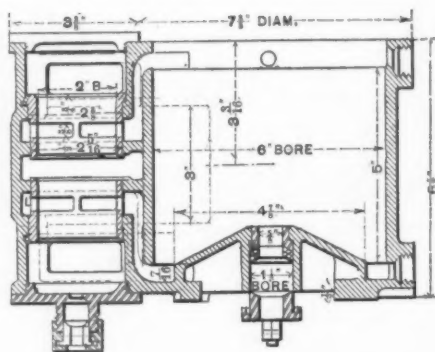


Fig. 6.—Vertical Section through Low-Pressure Cylinder and Valve.

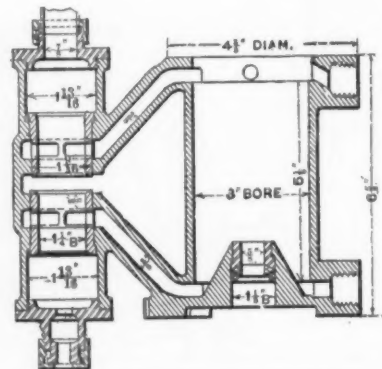


Fig. 7.—Vertical Section through High-Pressure Cylinder and Valve.

#### COMPOUND ENGINES FOR U. S. STEAM WHALE-BOAT.

space. It has suction-pipes leading to each of the tanks and filter and a delivery-pipe leading to the feed check-valve on the boiler. Placed on the starboard side of the engine space and driven by an independent direct-acting engine is a Sturtevant boiler, No. 1 Monogram. The blower engine is a direct-acting vertical, 2 inches in diameter and 1 1/4 inches stroke.

Taking into consideration the size of the engine, and the boat it is designed to propel, the machinery as a whole is as complete and well-adapted for its work as that of one of the cruisers. No attachment considered essential to the perfect working of the compound engine and which might add to its efficiency and economy has been omitted in the construction of these small engines. In addition to this, the material and workmanship are of the highest grade.

It is stated that the Chicago Forge and Bolt Company, of Chicago, have built for a Missouri company a passenger car con-

Line. She is of 10,000 tons displacement, and her actual gross tonnage is 9685 tons. Her dimensions are: Length, 582 feet (nearly 200 yards)—the longest ship afloat; 57 feet 6 inches broad and 39 feet 4 inches deep. She has accommodations for 1200 passengers—300 first-class, 150 second-class and 750 steerage or third-class passengers. She is fitted with 12 guns of the type usually known as 5-inch guns, which have a range at extreme elevation of more than five miles.

The vessel, notwithstanding her great size, may from the peculiarity of her construction be considered as one of the safest ships afloat. The whole of the machinery, engines, boilers and coal for working either of her twin screws is shut off completely from its neighbor by a fore-and-aft bulkhead, which intersects the six largest of the 12 water-tight compartments. This fore-and-aft bulkhead is pierced by only one locked door, the key of which is held by the chief engineer. The doors between the engine-rooms and the

The Teutonic carries only two masts and three funnels. The poles, however, carry no yards, as it is believed her engines are strong enough to propel her in any weather without the aid of square sails.

**Our Consular Service.**—The necessity for seeking a higher standard in the character of our foreign consular offices is broadly hinted at by a prominent merchant of this city, D. A. De Lima, in a letter to the New York Board of Trade and Transportation. He says: "The fact is notorious that we deem our relations with our neighbors of the South of so little importance that we have, with very rare exceptions, always sent men to represent us who, though perhaps capable for other things, have been entirely unqualified to fill their positions. The majority of them are men who before their appointment have never been interested in the South American States; they have been entirely ignorant of their history; the previous relations with the United States; they know



nothing of the trade, and in consequence have no ideas as to the means of improving it, and, finally, they lack the means of intercourse with the governments to which they are sent. In almost every instance they do not possess any knowledge of the Spanish or the Portuguese language." The suggestion is one that commends itself to the attention of the Washington Government under every administration.

### The Law and the Trusts.

Deprecating the predictions of a portion of the public press that trusts will be summarily ended by violent methods at the hands of the people, the *Philadelphia Ledger* discusses the question very sensibly as follows:

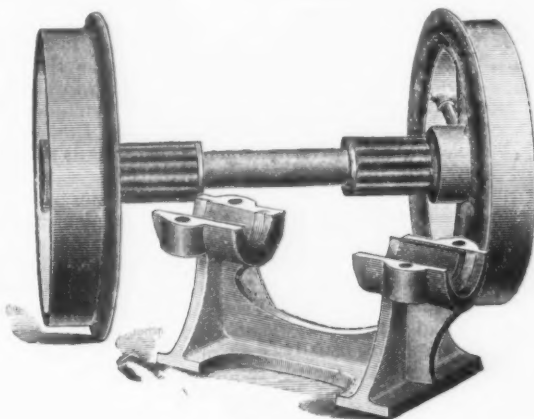
Trusts and combines, whenever and wherever they exist for the purpose of restricting the output of any necessary of living—of anything needful to the well-being of society—in order to fix upon it an arbitrary and artificial price, become oppressors and as such are to be got rid of. In this country they are evils comparatively new. Their injurious influence has scarcely begun to be felt as yet by the people. Wait till they do, and then they will go down as surely as the dead Alpine pine goes down before the sweep of the avalanche, but not by violence, not in a tempest of angry lawlessness, of anarchy let

will that can long endure. All public evils here continue only upon the common sufferance, or because of the general indifference. When they become oppressive, unendurable, they are dealt with, and

as they should be, by the law which has not yet been superseded by lawlessness, nor is it likely to be while intelligence and patriotism, respect for order and love of peace control the masses. These trusts

### Billet-Car.

The billet-car here illustrated is designed especially for use in wire and rod mills, the gauge of track being 24 inches.



ROLLER BEARING OF BILLET-CAR.

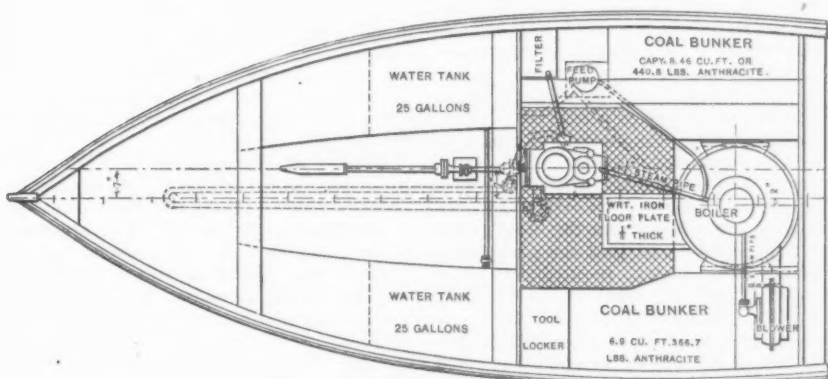


Fig. 8.—Half Plan of U. S. Steam Whale-Boat.

loose, but before the strong, though quiet, orderly irresistible force of the law.

When was it that this people during its hundred years and more of life found the want of law, or, having law, found it inadequate to put down any wrong that threatened their prosperity, their rights or their happiness? There never was a more patient, enduring, long-suffering people than those of this country; but, though they move slowly, they move surely. They have done it regarding other wrongs; they will do so regarding this new one. But not in lawlessness and violence. Already in Congress, in Legislatures, in constitutional conventions, in courts, they are beginning to move against the selfish, greedy trusts and combines. They are moving along wise, peaceful, certain lines against these enemies of society. What is needed to make their victory sure, to bring it about the more speedily, is not that the newspaper press shall threaten these trusts with predictions of popular uprisings against their promoters, but that it shall, by truly representing them and their purposes, create a common public sentiment antagonistic to whatever is wrong in them, which sentiment, acting upon the law-making powers, will remedy the wrong.

There has been, there can be no public wrong which is inimical to the spirit of our institutions, to the popular interest or

are becoming dangerously numerous and some of them aggressive to foolhardiness. But the tide of public sentiment is already rising against them, and before it ebbs it will sweep them out of existence. But, unless all precedents of the history



BILLET-CAR WITH ROLLER BEARINGS.

of this people are to go for nothing, there will be no violent, tempestuous uprising against them. They came quietly; they will go quietly. To believe otherwise would be to doubt the wise moderation of the masses—to question the abiding faith of the people in their own power to right by peaceful, lawful processes the wrongs that oppress them.

The entire car is made of metal, the bed or platform consisting of two heavy steel T-rails, with cross-heads in proportion, and the parts riveted together. The length of the frame is 7 feet 2 inches, the width 15 inches and the height from the track to the top of the bed 21 inches. The wheels are 18 inches in diameter, have a 3-inch tread, and are shrunk on the axle. The axle is formed of 2 3/16-inch round steel, each spindle being provided with 12 rollers 1/2 inch in diameter and 4 1/2 inches long, which construction constitutes an anti-friction bearing, permitting the car to be easily moved even when heavily loaded. The construction of the bearing is shown in the upper view. The weight of the car complete is 1000 pounds. These cars are made by the Jacob Hoffman Wagon Company, of Cleveland, Ohio.

The new French twin-screw steamer *La Touraine*, in course of construction for the American trade, will be faster and larger than any of her predecessors. She will be of 8000 tons burden, or 1000 tons larger than the *Bourgogne*, *Bretagne*, *Gascogne* and *Champagne*, while her horse-power will be increased from 8000, as in the older boats, to 12,000. She will be provided with twin screws and with the triple-expansion engine of the type which was first introduced on Atlantic lines by the French line. The metallic

portions of the hull are of the highest grade of steel from the foundries of *Terre Noire*. Like all French mail steamers, the *Touraine* is built under contract with the Government, and will be fitted for the carrying of heavy guns. It is expected that *La Touraine* will be completed in time to make her maiden trip in April next.

## TWO DAYS IN MIDDLESBOROUGH.

(Editorial Correspondence.)

During a hasty trip to England's greatest iron-making district—the Cleveland—a correspondent of *The Iron Age* gathered a few impressions, one day's stay in Middlesborough making it impossible to collect data which might be placed before your readers as information. There is something impressive in the great number of mills, furnaces and works crowded together in a limited area. The blast-furnace plants particularly are striking. Your correspondent does not remember having seen any group smaller than four, while rows of six and eight are numerous, and ten in a line were more than once observed. It is true that, generally speaking, the capacity of the furnaces is small, in spite of dimensions which are greater than ours in many cases. Their product does not usually exceed 500 to 600 tons a week, except when on foreign hematite ores, and in some cases on native ores goes down to 350 to 400 tons. The latter are lean, and from the stand-point of the quantity of stock smelted the furnaces, of course, compare more favorably with our crack plants on rich Lake ores. The handling of the materials, for which years since Sir I. Lowthian Bell claimed striking superiority, is certainly carried to great perfection. The railroad cars bringing the stock are elevated bodily to the tracks running along the ore-roasting kilns and the stock bins, from which the ore is drawn without shoveling it. So far as equipment is concerned, the brick stoves are gaining ground, even Sir I. Lowthian Bell, the famous advocate of the iron stove, being at work erecting Cowper stoves. No new plants have been put up in the district for some time past, so that it is not possible to ascertain readily in which direction furnace managers of long experience would seek improvement and make modifications. Generally speaking, the Middlesborough furnace men persist in slow driving. At the works belonging to the Cochranes however, higher blast pressures are employed, running up to 7 pounds, against  $4\frac{1}{2}$  to 5 pounds as the general rule of the district. The result has been a heavier output—up to 800 tons a day, coupled with good fuel economy—the Cochranes making a ton of iron with about 2000 pounds of coke. The firm named some time since introduced the systematic determination of moisture in the blast as an aid in running the furnace. The moisture runs up as  $6\frac{1}{2}$  to 7 grains per cubic foot, averaging about 4 grains. The determinations are made twice daily. Besides, like other plants in the district, gas analyses are frequently made.

During the past year at a number of furnaces the enormous mass of cinder which is produced is handled with the aid of a machine designed by an engineer connected with the works of Sir Bernhard Samuelson. The apparatus consists practically of a link-chain running over two wheels, there being attached to it a series of flat dishes about 24 inches wide by 15 inches long. The cinder is allowed to flow into these dishes and is carried along, the sag of the chain being allowed to dip into a water-tank. At a further point, as they rise to the second wheel, which is located higher than the one below the cinder run, a series of jets spray upon the cinder, chilling it thoroughly. Below the second wheel is the track upon which the cinder-cars are run. The apparatus is run by a small independent engine. The cinder, which is in the form of small pieces, is dumped direct into barges and is utilized in harbor works. A glance at the mountains of cinder which surround nearly every furnace plant of the district is suf-

ficient to substantiate the statement made in behalf of this method that it results in an important saving annually.

An interesting and, so far as your correspondent is aware of, a unique co-operation of two industries has been undertaken in Middlesborough. Under the initiative of the Bells the salt deposits of that section were discovered and their development was begun. It may be remarked incidentally that the Bells have lately sold out their interest in the salt business to the new trust which has been capturing that industry in England. At one plant in the Cleveland district the waste gases of the blast furnaces are utilized for boiling down the brine.

Your correspondent paid a hurried visit to two of the great steel works of the district, the North Eastern Steel Company and the Eston Steel Works, of Bolckow, Vaughn & Co. The former, the largest and among the oldest of the basic Bessemer plants in England, was visited at a time when work was to some extent interfered with by a guerilla warfare on the part of the workmen with the management. No general strike was in progress, but from time to time all the men of one department dropped their tools, another set in another taking its turn when work had again fairly got under way. The plant has four 12-ton converters placed in a line, and commanded by an overhead traveling crane, so that they can be bodily lifted out of their trunnions in accordance with Holley's designs. The iron ladle passes in front of them. Originally it was intended to use direct metal, and that practice was carried out for some time, but was finally abandoned in favor of remelting. The only point of interest in connection with the cupola plant is that hydraulic lifts take up entire railroad cars. There is nothing new in the method of renewing converter linings or bottoms. The latter, however, do not show the life which is generally reported in Germany, the probable cause being that the blow generally lasts longer and that the phosphorus contents are greater, requiring a larger proportion of lime additions per unit of product. The steel is cast into ladles, one to each two converters, from which it is transferred to a Wrightson casting-crane commanding a large pit. The Wrightson crane, which is regarded with satisfaction at the Northeastern Steel Works, has been described at length in the pages of the *Iron and Steel Institute*. In spite of many features which commend it, it has not found further applications, so far as your correspondent could learn. The ingots are heated in furnaces possessing no special features, a series of soaking-pits not being in use at the present time. The blooming is done in a very powerful reversing train without any special appliances worthy of notice, the principal feature of interest being the very heavy reductions made in the first passes. The works have a rail-mill with ample accommodations, but there is not rarely enough work on the order-books to give it full employment. The works, therefore, roll a good deal of steel in the form of wire and other soft billets, slabs and tin-plate bars, competing vigorously in the Welsh market with the local steel works in spite of their distance from the market.

In the afternoon your correspondent, with a small number of other engineers, drove out to the Eston Steel Works, of Bolckow, Vaughn & Co., a few miles below Middlesborough. The works, which, after Cammell's, rank as the heaviest producers in England, have ten Bessemer converters, of which four are acid and six are basic lined, the metal being carried direct from several groups of blast-furnaces in the immediate vicinity. A hasty glance at this part of the plant did not reveal anything which, so far as appliances were concerned, would be likely to attract the

attention of American Bessemer men. In the rolling-mill proper the first object of interest was a 60-inch reversing blooming-train, rolling slabs with two edging passes, with tables on both sides and a vertical hydraulic shear. Near it is a 36-inch slabbing-train. A somewhat peculiar practice was observed. The locomotive which brought the 4-ton slab to the train after depositing it backed up a few rods, and then starting forward literally bucked it into the rolls, a proceeding which was repeated whenever the slab made its appearance on that side of the train. On the other side was a roller-table mounted on a track, serving alternately the slabbing-train and the adjoining plate-train, the power being transmitted by a square shaft running the entire length of the trains in front of the housings. On this side of the train the plate is forced into the rolls by means of a vertical pusher-bar. In both trains the rolls are worked by an hydraulic cylinder and rack engaging with the screw. By the side of this train was a 36-inch plate-mill. The whole of the finishing side of the two trains is commanded by an overhead traveling-crane, which carries the plate to the great shear. The latter, the largest in the world, is a very interesting and massive piece of machinery, weighing 289 tons and having a capacity to cut cold 3-inch-plates 10 feet long. One wrinkle noticed in connection with the plate-rolling was the use, already alluded to in *The Iron Age*, of a series of gas-jets playing on the rolls to keep them hot while the train is not rolling. All the steel used in making plates is now made in the open-hearth furnace plant of the company, there being four in a line casting into one long pit. The latest furnace built is in accordance with the designs of Francis Hilton, the general manager of the works.

Another interesting class of work going on at the mill was the rolling of sleeper-plates in one heat from the bloom, the successive passes showing a rapid approach to the dish section of the sleeper plates. The rounded channel as rolled is cut into lengths, which immediately are delivered to a press which bends down the ends and is then passed to another press in which the lugs are punched up between which the rails are fastened. In the yard your correspondent was shown a number of sleepers made in accordance with the patents of James Riley, the well-known manager of the Steel Company of Scotland.

Thomas Midgley and Walter B. Nye, Beaver Falls, Pa., have been granted a patent on a new process of galvanizing metals, by which they are dipped in lead and drawn out through zinc. After being treated with acid the material passes through a bath of lead, at one end of which a small body of zinc is confined. The lesser specific gravity of the zinc permits it to be so separated. The material is drawn out through the zinc in the usual manner. The surface of the zinc exposed to the air is thus very small, and consequently there is but little oxidation. Various other advantages are claimed for the new process.

The Western railroads are doing an enormous business this month in transporting grain and live stock, with premonitions of a short supply of cars in September. Grain deliveries at Chicago last week were the largest known in the history of the city. The total receipts of all kinds of grain for the week were 4,855,000 bushels. For the same week last year they were only 2,863,000 bushels. It was estimated that the comparative increase for August would reach nearly 7,000,000 bushels. At the present rate of deliveries this estimate will be considerably exceeded.



**Electric Railway.**

The Weems railway system of rapid transit is intended for the transportation of mails, express matter and light freight. The general arrangement of the track and motor is given in the accompanying side and end elevations. The motor car is 18 feet long and 2½ feet square at each end. It is pointed in front, the point being below the longitudinal center, so that the greater air-pressure upon the upper surface of the wedge has a tendency to keep the car on the track. To reduce atmospheric pressure to a minimum, all the wheels and driving apparatus are placed within the

A much larger track is being built to test the passenger system applied in the same way.

**Canadian Statistics.**

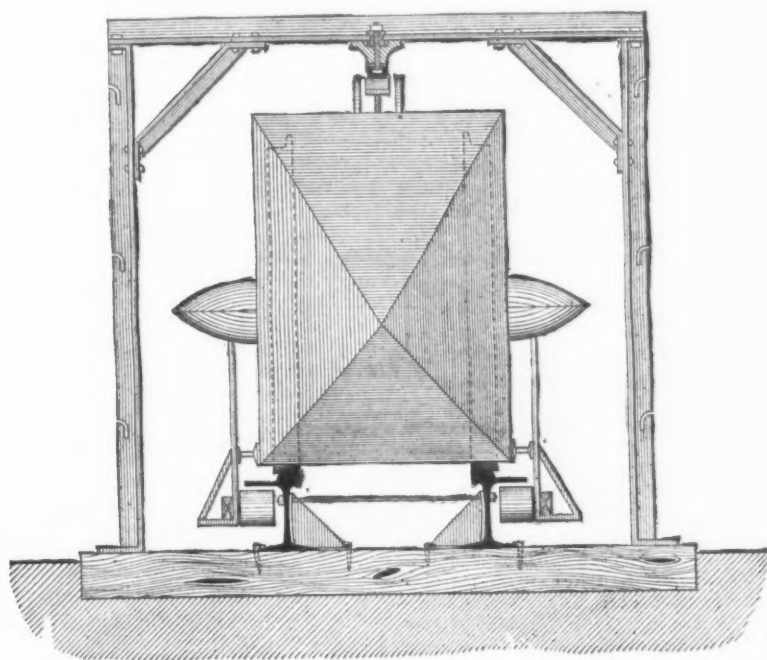
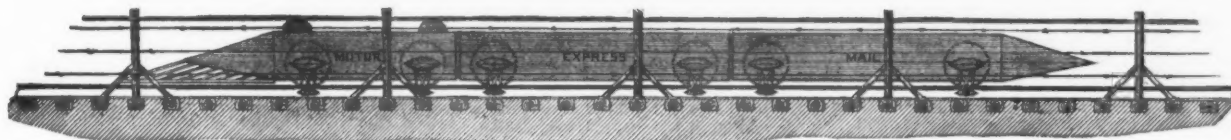
The Canadian Statistical Abstract and Record, for 1888, recently given to the public by the Government at Ottawa, contains a great deal of useful information for business men with relations on both sides of the boundary line. According to this document

THE POPULATION OF CANADA at present is 4,972,101, as against 4,324,810 in 1881, when the last census was

miles in Prince Edward Island to 188,688 square miles in Quebec, Ontario containing 181,800 square miles, Nova Scotia 20,907, New Brunswick 27,174, Manitoba 60,520. British Columbia contains 341,305 square miles, having nearly double the area of any other province. The districts of Alberta, Assiniboia and Saskatchewan are organized as territories, having electoral districts which return members to a General Assembly meeting at Regina and presided over by a lieutenant-governor. There are in unorganized territories the following areas: Keewatin, about 400,000 square miles; Athabasca, about 122,000; remainder of territories, 1,816,730 square miles. Canada has nearly one-half the territory of the whole of the British Empire. It is nearly as large as the whole of Europe. It is larger by 600,000 square miles than the United States, exclusive of Alaska.

**THE PUBLIC DEBT AND REVENUES.**

The gross public debt of Canada June 30, 1888, was \$284,513,842; the net public debt, \$234,531,358. The increase in the gross liabilities in the previous year was \$11,326,216, made up of railway and canal expenditures, railway subsidies, public works, assumption of expenditures for the navigation of the St. Lawrence, &c. The gross public debt when the Dominion was established in 1867-68 was \$96,896,666, so that the debt has trebled in 21 years. The assets of \$21,139,531 of 1876-78 have increased to \$49,982,483. The revenue of Canada in 1867-68 was \$13,678,928; expenditures, \$13,486,092. The revenue in 1888 was \$35,908,463; the expenditure, \$36,718,495. The revenue in 1888 was the highest of any year since the union of the provinces, but the expenditure rose to \$39,011,612 in 1888, owing to the rebellion in the Northwest. Of the revenue for 1888, \$22,105,926 came from customs, \$6,071,926 from excise, \$3,167,564 from Government railways, \$279,477 from canals, \$2,379,242 from the Post-office and \$932,025 from investments. Of the expenditures for 1888,

*End Elevation.**Side Elevation.***ELECTRO-AUTOMATIC RAILWAY FOR MAIL AND PACKAGES.**

car body. The electric motor is geared to drive the large wheels shown by the dotted outline in the end view, which also shows the frame carrying the overhanging wheels which guard against derailment. The gauge of the road is 24 inches. In putting the road into practice it is expected to have stations at intervals along the line for the generation of the current for driving the motors. All the trains will be controlled from the stations, and will be started, stopped and their speed regulated as desired. A special form of rail serves as a conductor for the current in both directions. In making up a train the ends of the cars are telescoped together, thereby forming a continuous and unbroken exterior. The Electro-Automatic Transit Company, of Baltimore, who control this system, have built an experimental circular track at Laurel, Md., some two miles in length. The track has excessive grades and curves in order to test the possibilities of the system. On this track trains have been found to work well and a speed of over two miles an hour has been attained.

taken. The gain between 1871 and 1881 was about 2 per cent. per annum. According to the abstract, 671,519 immigrants have entered Canada since 1881. In estimating its present population, allowance is made for the considerable emigration to the United States that has been going on and for doubtful immigration statistics. The population of Montreal is increased from 140,747, in 1881, to 200,000 in 1888; Toronto, from 77,034 to 166,809; Hamilton, from 35,359 to 43,082; London, from 19,725 to 26,960; Ottawa, from 25,600 to 40,000; Halifax, from 36,100 to 40,000; Winnipeg, from 6249 to 22,098, and other cities in the same proportion. The city of Vancouver, the terminus of the Canadian Pacific Railway on the Pacific Coast, has gone up in three years from nothing to 10,000 population.

**THE EXTENT OF CANADIAN TERRITORY.**

The area of Canada is placed at 3,610,257 square miles, of which one-third is under organized government in provinces and territories ranging from 2133 square

\$11,967,754 went for interest on the public debt and sinking fund, \$4,188,513 for subsidies to the provinces, \$807,422 for legislation, \$1,258,618 for civil government, \$2,162,116 for public works and buildings, \$1,273,179 for militia and defense, \$1,000,802 to the Indians, \$862,965 for mounted police in the Northwest Territories, \$1,000,000 for penitentiaries and the administration of justice. The fisheries took \$416,182; lighthouse and coast service, \$489,259; mail subsidies and steamship subventions, \$342,613; the railways (operating expenses), \$3,621,077, and the Post-office, \$2,889,729. It cost \$851,025 to run the customs and \$360,491 for excise.

**RAILWAY STATISTICS.**

The Inter-Colonial Railway, from Halifax to Quebec, owned by the Government of Canada, with its branches, has cost the Dominion about \$45,000,000. The Government also owns the railways in Prince Edward Island and is building several local railways in Nova Scotia. The policy

of granting Government subsidies in aid of railway construction by private companies was begun some years ago, and under it there had been voted to the end of November, 1888, \$10,918,665, besides 19,787,744 acres of the public lands, exclusive of the 25,000,000 acres granted to the Canadian Pacific Railway. The greater number of these subsidies has been claimed by railway companies. The Dominion Government has contributed altogether to railways in bonuses \$134,278,219, or nearly one-half of the public debt. A large proportion of this has gone to subsidize the Canadian Pacific Railway, on which the Government has expended altogether over \$61,000,000. There has also been extended to railways, in the shape of loans, assistance to the extent of \$20,920,035. Provincial governments have aided railways to the extent of \$23,342,758, and municipalities have given them \$13,044,224.

When the Dominion was formed in 1867 there were in operation 2258 miles of railway, and on June 30, 1888, there were 12,163 miles running and a total of 12,701 completed. The paid-up capital in 1868 was \$160,471,190, and in 1888, \$727,180,449. Exclusive of Government aid the sources of capital are: Ordinary share capital, \$231,623,891; preference do., \$95,870,491; bonded debt, \$228,617,728, about 25 per cent. of the total capital being State and municipal aid. The train mileage has increased from 17,680,168 in 1875 to 37,391,206 in 1888, the number of passengers carried from 5,190,416 to 11,416,791, the tons of freight hauled from 5,670,836 to 17,173,759, the earnings from \$19,470,539 to \$42,151,153, the working expenses from 15,775,532 to \$30,652,048. The mileage of the several railway companies in Canada alone stood as follows last year: Canadian Pacific system, 4962 miles; Grand Trunk system, 3093 miles; Dominion Government, 1184; New Brunswick system, 415½; Canada Southern, 362½; Southeastern system (in the Province of Quebec, under control of the Canadian Pacific), 260½; Manitoba and Northwestern, 207 miles, in addition to a large number of smaller roads. The Northern and Northwestern, in Manitoba, had, in 1887, 493 miles of road; mileage for 1888 is not given. The proportion of expenses to receipts was as follows: Canadian Pacific, 71; Grand Trunk, 69; Canada Southern, 61; New Brunswick system, 67; Canada Atlantic, 57; Government railways, 114. The proportion for all Canadian railways was 72.

#### IMPORTS AND EXPORTS.

The imports of Canada have risen from \$73,459,644 in 1868 to \$110,894,630 in 1888. The imports of 1888 were exceeded in value by some former years, notably 1873, but applying the values of 1873 to the quantities of 1888 the imports of 1888 would be shown to be the largest in the history of the country. The exports have risen from \$57,567,888 in 1868 to \$90,203,000 in 1888. The year 1882 was high-water mark in Canadian exports in point of value, and applying the values of 1882 to the quantities of 1888 would give the largest total value of any year. Of the imports of 1888 \$77,784,037 was dutiable, \$33,110,593 free. Among the free imports were the following: Anthracite coal, \$5,290,412; hides, \$1,619,822; raw wool, \$1,322,783; leaf tobacco, \$1,489,357; agricultural products, \$2,020,356; cotton wool and waste, \$3,222,943; tea, \$2,940,515; coin and bullion, \$2,175,472; tin, \$1,045,395; steel rails, \$1,232,531; dye stuffs and chemicals, \$1,239,193. The free coal, tobacco, wool, agricultural products and dye stuffs were mainly from the United States.

Among the exports produce of the mine increased from \$1,446,857 in 1868 to \$4,110,937 in 1888; produce of the fisher-

ies from \$3,357,510 to \$7,793,183; produce of the forest from \$18,262,170 to \$21,302,814; animals and their products from \$6,893,167 to \$24,719,297; agricultural products from \$12,871,055 to \$15,436,360; manufactures from \$1,572,546 to \$4,161,282. Nearly all Canadian minerals are sent to the United States. Nearly one-half the Canadian fish comes here. The total exports of lumber were \$21,302,814, of which the United States took just half. The total exports of animals and their produce were \$24,719,297, of which the United States took \$7,595,743, the bulk of these going to Great Britain. Of the total of agricultural exports, \$15,436,360, the United States took two-thirds—viz., \$10,306,278.

Over half the total imports of Canada in 1888 were from the United States, viz., 50.06 per cent., the figures being: Total imports, \$110,894,630, of which the United States sent \$55,513,790. Of the total exports from Canada, \$90,203,000, there was sent to the United States \$42,572,065. Compared with the year 1887 the trade of Canada with the United States in 1888 showed an increase of \$9,419,333 and formed 48.77 per cent. of the total trade; the trade of Canada with Great Britain decreased \$10,220,285 and formed 39.54 per cent. of the total trade.

#### CANADIAN SHIPPING.

The shipping owned in Canada on December 31, 1888, was as follows: Steamers, 1285, with gross tonnage, 207,142, and 7142 sailing vessels, the total net tonnage being 1,089,642. During 1888 there was a decrease of 36 sailing vessels, 40,605 tons, and an increase of 45 steamers, 28,953 tons. The tonnage of vessels remains about the same as in 1873, although in the interval—in 1878—it rose to 1,333,015 tons. The three maritime provinces—particularly New Brunswick and Nova Scotia—own the bulk of the shipping, viz.: New Brunswick, 239,332 tons, Nova Scotia, 485,709 tons. Quebec Province comes next with 178,520 tons, then Ontario, 139,502 tons, Prince Edward Island, 26,586 tons, British Columbia, 14,249 tons, Manitoba, 5,744 tons. At \$30 per ton the value of Canadian shipping would be \$32,689,260. Last year there were built 264 vessels, 25,130 tons. The number of vessels arriving at and departing from all Canadian ports in 1888 was 64,303, of 15,217,308 tons register, an increase of 6368 vessels and 1,126,310 tons over 1887. Men employed numbered 640,911, or 51.115 more than in 1887. Over one-half was Canadian, and most of the remainder foreign. Of the vessels, 30,807, representing 9,197,803 tons, were sea-going, the remainder being lakers and coasting vessels. Canada stands the fifth ship-owning country in the world, the figures being: The United Kingdom, 7,123,754 tons; the United States (including licensed and enrolled), 4,105,844; Sweden and Norway, 2,024,471; German Empire, 1,240,182; Canada, 1,089,642 tons, exclusive of non-registered vessels.

**Speculation in the Argentine Republic.**—The wild spirit of speculation in the Argentine Republic has at last forced up the premium on gold to 76 per cent., a point never before reached and maintained stationary. The Buenos Ayres *Standard* says: "Nobody in or out of power dreams of retrenchment, and the result is an unbridled speculation that laughs at all ministerial subterfuges to avoid the dilemma of meeting the situation in earnest by stringent legislation with regard to issues of greenbacks and mortgage bonds. In this helter-skelter race of new issues and new companies the gold premium is shooting ahead at a tremendous pace, and the very worst feature of the situation is that there are no symptoms of any sensible slackening in

the speed of this advance. Under such circumstances, though the Argentine Republic appears to be on the crest of a tidal wave of prosperity, distrust is rampant in the commercial body, and nobody believes in any steady or permanent decline in gold or appreciation of paper." Despite the sudden rise that has already taken place there is a growing conviction in Buenos Ayres that gold will rise still higher in view of the rumored issue of 60,000,000 more National and 100,000,000 more La Plata cedulas, and an advance to 100 per cent. premium is not improbable.

#### Steamship Subsidies.

As the question of subsidies in aid of steamship navigation is likely to have a prominent place in the discussions of the next Congress, it is well that the public should know what the Government has done heretofore in this direction. In 1845 the Postmaster-General was authorized to contract for ocean service in steamers whenever the public interest required it, and he was left to decide upon the routes and ports of the several lines. He contracted with Edward Mills for four ships and 20 trips a year from New York to Bremen and Havre for \$400,000, and with E. K. Collins & Co. for four ships and 20 trips from New York to Liverpool for \$385,000. Contracts were also made for service from New York to New Orleans and the Isthmus of Panama and from Panama to California and Oregon for \$489,000. Congress approved the contracts and advanced part of the money upon them to assist in building the ships. In 1850 a line was established from Charleston to Havana under a payment of \$50,000 a year. The subsidy to Collins was increased in 1852 to \$858,000 a year. In that year the Government was expending \$1,840,250 in subsidies, as follows: To Liverpool, \$858,000; from New York to Charleston, Havana and New Orleans, \$290,000; for the Panama and Oregon service, \$348,250; to Bremen and Havre, \$294,000; between Charleston and Havana, \$50,000. In 1853 the opposition to subsidies became serious. In 1856 the subsidy to Collins was reduced to \$385,000, and in the following year his contract was allowed to come to an end; the Bremen and Havre contracts expired at the same time. No further subsidies were granted until 1865, when one of the \$500,000 was given to the Pacific Mail Company for carrying mails to China and Japan, and another to a New York company to carry mails from New York to Brazil for \$150,000. Both of these contracts were terminated at the end of ten years.

The Treasury Department has granted an application by a New Orleans firm to have a consignment of copper percussion caps intended for transmission to interior points taken from the list of explosives, so that they may be forwarded under bond in the ordinary manner. This action has been taken upon a report from the Collector at New York that actual tests show that these caps, used for sporting purposes only, are not explosive articles, and are not, therefore, properly included in the list of explosives, but that blasting caps and detonators used for blasting are dangerous.

Under an advertisement issued by the Ordnance Office, War Department, for "sabots," the only bid received was from the South Boston Iron Works at \$1.30 a pound for the 11-inch sabots and \$1.50 a pound for the 7-inch sabots, to be delivered within six weeks after the signing of the contract. A sabot is an arrangement to center shot in guns to make them fit to the bore.

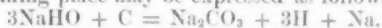


## Aluminium.\*

In a lecture delivered by Sir Henry Roscoe recently on this subject, the lecturer reminded his hearers that 33 years ago Mr. Barlow delivered a lecture on aluminium in which he stated that the metal was then worth £3 per ounce, while now it is sold for 20/ per pound. It is manufactured by the ton by the Aluminium Company at their works at Oldbury, near Birmingham. The capacity of the works is 100,000 pounds per annum, to produce which requires not only that at least 400,000 pounds of sodium, 800,000 pounds of chlorine and 1,000,000 pounds of double chloride should be annually manufactured, but in addition that each of these materials should be produced at a very low cost, in order to enable the metal to be sold at 20/ per pound. The company's works now cover a space of nearly 5 acres. They are divided into five separate departments—(1) sodium, (2) chlorine, (3) chloride, (4) aluminium, (5) foundry, rolling, wire-mills, &c. In each department an accurate account is kept of the production each day, the amount of material used, the different furnaces and apparatus in operation, &c. In this manner it has been found possible to ascertain each day exactly how the different processes are progressing and what effect any modification has, either on cost, quantity or quality of product. By this means a complicated chemical process is reduced to a series of very simple operations, so that, while the processes are apparently complicated and difficult to carry out successfully, this is not the case now that the details connected with the manufacture have been perfected, and each operation carried on quite independently until the final materials are brought together for the production of the aluminium.

## MANUFACTURE OF SODIUM.

The first improvement occurs in the manufacture of sodium by what is known as the Castner process. Practically, the process consists in heating fused caustic soda in contact with carbon while the former substance is in a perfectly liquid condition. By the process in vogue before the introduction of this method it was always deemed necessary that special means should be taken to guard against actual fusion of the mixed charges, which, if it were to take place, would to a large extent allow the alkali and reducing material to separate. Thus having an infusible charge to heat, requiring the employment of a very high temperature for its decomposition, the iron vessels must be of small circumference to allow the penetration of the heat to the center of the charge without actually melting the vessel in which the materials are heated. By the new process, owing to the alkali being in a fused or perfectly liquid condition in contact directly with carbon, the necessity of this is avoided, and consequently the reduction can be carried on in large vessels at a comparatively low temperature. The reaction taking place may be expressed as follows:



The vessels in which the charges of alkali and reducing material are heated are of egg-shaped pattern, about 18 inches in width at their widest part and about 3 feet high, and are made in two portions, the lower one being actually in the form of a crucible, while the upper one is provided with an upright stem and a protruding hollow arm. This part of the apparatus is known as the cover. In commencing the operations these covers are raised in the heated furnace through apertures provided in the floor of the heated chamber, and are then fastened in their place by an attachment adjusted to

the stem; the hollow arm extends outside the furnace. Directly below each aperture in the bottom of the furnace are situated the hydraulic lifts, attached to the top of which are the platforms, upon which are placed the crucibles to be raised into the furnace. Attached to the hydraulic lifts are the usual reversing-valves for lowering or raising, and the platform is of such a size as, when raised, completely to fill the bottom aperture of the furnace. The charged crucible, being placed upon the platform, is raised into its position, the edges meeting those of the cover, forming an air-tight joint, which prevents the escape of gas and vapor from the vessel during reduction, except by the hollow arm provided for this purpose. The natural expansion of the iron vessels is accommodated by the water-pressure in the hydraulic lifts, so that the joint of the cover and crucible is not disturbed until it is intended to lower the lift for the purpose of removing the crucible.

The length of time required for the first operation of reduction and distillation is about two hours. At the end of this time the crucibles are lowered, taken from the platforms by a large pair of tongs on wheels, carried to a dumping-pit and thrown on their side. The residue is cleaned out and the hot pot, being again gripped by the tongs, is taken back to the furnace. On its way the charge of alkali and reducing material is thrown in. It is again placed on the lift and raised in position against the edges of the cover. The time consumed in making the change is one and a half minutes, and it only requires about seven minutes to draw, empty, recharge and replace the five crucibles in each furnace. In this manner the crucibles retain the greater amount of their heat, so that the operation of reduction and distillation now only requires one hour and ten minutes. The four furnaces, of five crucibles each, when in operation are drawn alternately, so that the process is carried on night and day.

Attached to the protruding hollow arm of the cover are the condensers, which are of a peculiar pattern specially adapted to this process, being quite different from those formerly used. They are about 5 inches in diameter and nearly 3 feet long, and have a small opening in the bottom about 20 inches from the nozzle. The bottom of these condensers is so inclined that the metal condensed from the vapor issuing from the crucible during reduction flows down and out into a small pot placed directly below this opening. The uncondensed gases escape from the condenser at the further end, and burn with the characteristic sodium flame. The condensers are also provided with a small hinged door at the further end, by means of which the workmen from time to time may look in to observe how the distillation is progressing. Previous to drawing the crucibles from the furnace for the purpose of emptying and recharging, the small pots, each containing the distilled metal, are removed and empty ones substituted. Those removed each contain on an average about 6 pounds of metal, and are taken directly to the sodium-casting shop, where it is melted and cast, either into large bars ready to be used for making aluminium or in smaller sticks to be sold.

Special care is taken to keep the temperature of the furnaces at about 1000° C., and the gas and air valves are carefully regulated so as to maintain as even a temperature as possible. The covers remain in the furnace from Sunday night to Saturday afternoon, and the crucibles are kept in use until they are worn out, when new ones are substituted without interrupting the general running of the furnace. A furnace in operation requires 250 pounds of caustic soda every one hour and ten minutes, and yields in the same time 36

pounds of sodium and about 240 pounds of crude carbonate of soda. With the four furnaces at work 120 pounds of sodium can be made every 70 minutes, or over a ton in the 24 hours. The residual carbonate, on treatment with lime in the usual manner, yields two-thirds of the original amount of caustic operated upon. The sodium, after being cast, is saturated with kerosene oil, and stored in large tanks holding several tons, placed in rooms specially designed for security against either fire or water.

## CHLORINE MANUFACTURE.

This part of the works is connected with the adjacent works of Messrs. Chance Brothers by a large gutta-percha pipe, by means of which from time to time hydrochloric acid is supplied direct into the large storage cisterns, from which it is used as desired for making the chlorine. For the preparation of the chlorine-gas needed in making the chloride the usual method is employed—that is, hydrochloric acid and manganese dioxide are heated together, when chlorine gas is evolved with effervescence, and is led away by earthenware and lead pipes to large lead-lined gasometers, where it is stored. The materials for the generation of the chlorine are brought together in large tanks or stills, built up of great sandstone slabs, having rubber joints, and the heating is effected by the injection of steam. The evolution of gas, at first rapid, becomes gradually slower, and at last stops, the hydrochloric acid and manganese dioxide being converted into chlorine and manganous chloride. This last compound remains dissolved in the "spent still liquor" and is reconverted into manganese dioxide, to be used over again, by Weldon's manganese recovery process. Owing to the difficulty of keeping up a regular supply of chlorine under a constant pressure directly from the stills, in order that the quantity passed into the 60 different retorts in which the double chloride is made can be regulated and fed as desired, four large gasometers were erected. Each of these is capable of holding 1000 cubic feet of gas, and is completely lined with lead, as are all the connecting mains, &c., this being the only available metal which withstands the corrosive action of chlorine. The gasometers are filled in turn from the stills, the chlorine consumed being taken direct from a gasometer under a regular pressure until it is exhausted; the valves being changed, the supply is taken from another holder, the emptied one being refilled from the still.

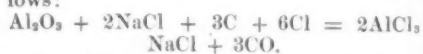
## MANUFACTURE OF THE DOUBLE CHLORIDE.

Twelve large regenerative gas-furnaces are used for heating, and in each of these are fixed five horizontal fire-clay retorts about 10 feet in length, into which the mixture for making the double chloride is placed. These furnaces have been built in two rows, six on a side, the clear passage-way down the center of the building, which is about 250 feet long, being 50 feet in width. Above this central passage is the staging, carrying the large lead mains for the supply of the chlorine coming from the gasometers. Opposite each retort and attached to the main are situated the regulating-valves, connected with lead and earthenware pipes, for the regulation and passage of the chlorine to each retort. The valves are of peculiar design, and have been so constructed that the chlorine is made to pass through a certain depth of liquid, which not only by opposing a certain pressure allows a known quantity of gas to pass in a given time, but also prevents any return from the retort into the main should an increase of pressure be suddenly developed in the retorts. The mixture with which the retorts are charged is made by grinding together hydrate of alumina, salt and charcoal. This mixture is then moistened

\* Abstract of lecture delivered by Sir Henry Roscoe, M.P., V.P.R.S., before the Royal Institution of Great Britain.

with water, which partially dissolves the salt, and thrown into a pug-mill of the usual kind for making drain-pipes, excepting that the mass is forced out into solid cylindrical lengths upon a platform, alongside of which a workman is stationed with a large knife, by means of which the material is cut into lengths of about 3 inches each. These are then piled on top of the large furnaces to dry. In a few hours they have sufficiently hardened to allow of their being handled. They are then transferred to large wagons and are ready to be used in charging the retorts.

The success of this process is in a great measure dependent (1) on the proportionate mixture of materials; (2) on the temperature of the furnace; (3) on the quantity of chlorine introduced in a given time, and (4) on the actual construction of the retorts. I am, however, not at liberty to discuss the details of this part of the process, which have only a commercial interest. In carrying on the operation the furnaces or retorts, when at the proper temperature, are charged by throwing in the balls until they are quite full; the fronts are then sealed up and the charge allowed to remain undisturbed for about four hours, during which time the water of the alumina hydrate is completely expelled. At the end of this time the valves on the chlorine main are opened, and the gas is allowed to pass into the charged retorts. In the rear of each retort and connected therewith by means of an earthenware pipe are the condenser-boxes, which are built in brick. These boxes are provided with openings or doors and also with earthenware pipes, connected with a small flue for carrying off the uncondensed vapors to the large chimney. At first the chlorine passed into each retort is all absorbed by the charge, and only carbonic oxide escapes into the open boxes, where it burns. After a certain time, however, dense fumes are evolved, and the boxes are then closed, while the connecting pipe between the box and the small flue serves to carry off the uncondensed vapors to the chimney. The reaction which takes place is as follows:



The chlorine is passed in for about 72 hours in varying quantity, the boxes at the back being opened from time to time by the workmen to ascertain the progress of the distillation. At the end of the time mentioned the chlorine-valves are closed and the boxes at the back of the furnace are all thrown open. The crude double chloride is distilled from the retorts condenses in the connecting-pipe and trickles down into the boxes, where it solidifies in large irregular masses. The yield from a bench of five retorts will average from 1600 pounds to 1800 pounds, which is not far from the theoretical quantity. After the removal of the crude chloride from the condenser-boxes the retorts are opened at their charging end, and the residue, which consists of a small quantity of alumina, charcoal and salt, is raked out and remixed in certain proportions with fresh material, to be used over again. The furnace is immediately recharged and the same operations repeated, so that from each furnace upward of 3500 pounds of chloride is obtained weekly. With 10 of the 12 furnaces always at work the plant is easily capable of producing 30,000 pounds of chloride per week, or 1,500,000 pounds per annum.

Owing to the presence of iron both in the materials used (viz., charcoal, aluminium, &c.) and in the fire-clay composing the retorts the distilled chloride always contains a varying proportion of this metal in the form of ferrous and ferric chlorides. When it is remembered that it requires 10 pounds of this chloride to produce 1 pound of aluminium by reduc-

tion, it will be quite apparent how materially a very small percentage of iron in the chloride will influence the quality of the resulting metal. I may say that, exercising the utmost care as to the purity of the alumina and the charcoal used, and after having the retorts made of special fire-clay containing only a very small percentage of iron, it was found almost impossible to produce upon a large scale a chloride containing less than 0.3 per cent. of iron. This crude double chloride, as it is now called at the works, is highly deliquescent, and varies in color from a light yellow to a dark red. The variation in color is not so much due to the varying percentage of iron contained as to the relative proportion of ferric or ferrous chlorides present, and although a sample may be either very dark or quite light it may still contain only a small percentage of iron if it be present as ferric salt, or a very large percentage if it is in the ferrous condition. Even when exercising all possible precautions, the average analysis of the crude double chloride shows about 0.4 per cent. of iron. The metal subsequently made from this chloride, therefore, never contained much less than about 5 per cent. of iron, and as this quantity greatly injures the capacity of aluminium for drawing into wire, rolling, &c., the metal thus obtained required to be refined. This was successfully accomplished by Mr. Castner and his able assistant, Mr. Cullen, and for some time all the metal made was refined, the iron being lowered to about 2 per cent.

The process, however, was difficult to carry out, and required careful manipulation, but as it then seemed the only remedy for effectively removing the iron, it was adopted and carried on for some time quite successfully, until another invention of Mr. Castner rendered it totally unnecessary. This consisted in purifying the double chloride before reduction. I cannot now explain this process, but I am able to show some of the product. This purified chloride, or pure double chloride is, as you see, quite white, and is far less deliquescent than the crude, so that it is quite reasonable to infer that this most undesirable property is greatly due to the former presence of iron chlorides. I have seen large quantities containing upward of 1½ per cent. of iron, or 150 pounds to 10,000 of the chloride, completely purified from iron in a few minutes, so that, while the substance before treatment was wholly unfit for the preparation of aluminium, owing to the presence of iron, the result was, like the sample exhibited, a mass containing only 1 pound of iron in 10,300, or 0.01 per cent. The process is extremely simple and adds little or no appreciable cost to the final product. After treatment this pure chloride is melted in large iron pots, and run into drums similar to those used for storing caustic soda. As far as I am aware, it was generally believed to be an impossibility to remove the iron from anhydrous double chloride of aluminium and sodium, and few, if any, chemists have ever seen a pure white double chloride.

#### ALUMINIUM MANUFACTURE.

I now come to the final stage of the process—viz., the reduction of the pure double chloride by sodium. This is effected, not in a tube of Bohemian glass, as shown in Mr. Barlow's lecture in 1856, but in a large reverberatory furnace, having an inclined hearth about 6 feet square, the inclination being toward the front of the furnace through which are several openings at different heights. The pure chloride is ground, together with cryolite, in about the proportions of two to one, and is then carried to a staging erected above the reducing-furnace. The sodium, in large slabs or blocks, is run through a machine similar to an ordinary tobacco-cutting machine, where it is cut into small thin slices; it is then also trans-

ferred to the staging above the reducing-furnace. Both materials are now thrown into a large revolving drum, when they become thoroughly mixed. The drum being opened and partially turned, the contents drop out into a car on a tramway directly below.

The furnace having been raised to the desired temperature, the dampers of the furnace are all closed to prevent the access of air, the heating gas also being shut off. The car is then moved out on the roof of the furnace until it stands directly over the center of the hearth. The furnace-roof is provided with large hoppers, and through these openings the charge is introduced as quickly as possible. The reaction takes place almost immediately, and the whole charge quickly liquefies. At the end of a certain time the heating gas is again introduced, and the charge kept at a moderate temperature for about two hours. At the end of this period the furnace is tapped by driving a bar through the lower opening, which has previously been stopped with a fire-clay plug, and the liquid metal run out in a silver stream into molds placed below the opening. When the metal has all been drawn off the slag is allowed to run out into small iron wagons and removed. The openings being again plugged up, the furnace is ready for another charge. From each charge, composed of about 1200 pounds of pure chloride, 600 pounds of cryolite and 350 pounds of sodium, about 115 pounds to 120 pounds of aluminium is obtained.

The purity of the metal entirely depends upon the purity of the chloride used, and without exercising more than ordinary care the metal tests usually indicate a purity of metal above 99 per cent. On the table is the metal run from a single charge; its weight is 116 pounds, and its composition, as shown by analysis, is 99.2 aluminium, 0.3 silicon and 0.5 iron. This I believe to be the largest and the purest mass of metal ever made in one operation. The result of eight or nine charges are laid on one side, and then melted down in the furnace to make a uniform quantity, the liquid metal, after a good stirring, being drawn off into molds. These large ingots, weighing about 60 pounds each, are sent to the casting-shop, there to be melted and cast into the ordinary pigs, or other shapes, as may be required for the making of tubes, sheets or wire, or used directly for making alloys of either copper or iron.

The following statement shows approximately the quantity of each material used in the production of a ton of aluminium:

Metallic sodium .....	6,300 pounds.
Double chloride.....	22,400 "
Cryolite.....	8,000 "
Coal.....	8 tons.

To produce 6300 pounds of sodium is required:

Caustic soda.....	44,000 pounds.
Carbide made from pitch, 12,000 pounds, and iron turnings, 1000 pounds .....	7,000 "
Crucible castings.....	2½ tons.
Coal.....	75 "

For the production of 22,400 pounds of double chloride is required:

Common salt.....	8,000 pounds.
Alumina hydrate.....	11,000 "
Chlorine gas.....	15,000 "
Coal.....	180 tons.

For the production of 15,000 pounds of chlorine gas is required:

Hydrochloric acid.....	180,000 pounds.
Limestone dust.....	45,000 "
Lime.....	30,000 "
Loss of manganese.....	1,000 "

It might seem on looking over the above numbers as if an extraordinary amount of waste occurred, and as if the production is far below that which ought to be obtained, but a study of the figures will show that this is not the case. I would wish to call attention to one item in particular—viz.—fuel, it having been remarked that



the consumption of coal must prevent cheap production. I think that when it is remembered that coal such as used at the works costs only 4/ per ton, while the product is worth £2240 per ton, the cost of coal is not an item of consequence in the cost of production. The total cost of the coal to produce one ton of metal being £50, the actual cost for fuel is less than sixpence for every pound of aluminium produced. The ratio of cost of fuel to value of product is indeed less than is the case in making either iron or steel. In concluding my remarks as to the method of manufacture and the process in general, I may add that I do not think it is too

mechanism at 50 cents a pound, other forgings at 40 cents a pound and the hoops at 20 cents a pound. No award was made.

#### Machine for Making Wire Rope.

This machine forms a continuous rope by a series of steps which involve the laying up of wires to form the strand cores, then the laying of the wires about these cores to form the strands, and finally the laying up of the strands about a central core to form the completed rope. The peculiarity of the machine we illustrate is in the power-transmitting mech-

anism and their movements are those common to this class of machines, and it is evident that by the rotation of the turntables on the lower platform about their own axes the wires are laid up to form strand cores. The rotation of the turntables on the upper platform lays up a series of wires around these cores to form strands. By the revolution of all the turntables about the central shaft the strands are laid up to form the rope and by the rotation of the spool-frames on their own shafts the wires are laid up straight in the strands.

The upright-shaft O' carries the bevel-gear O' and the gear O. The latter meshes

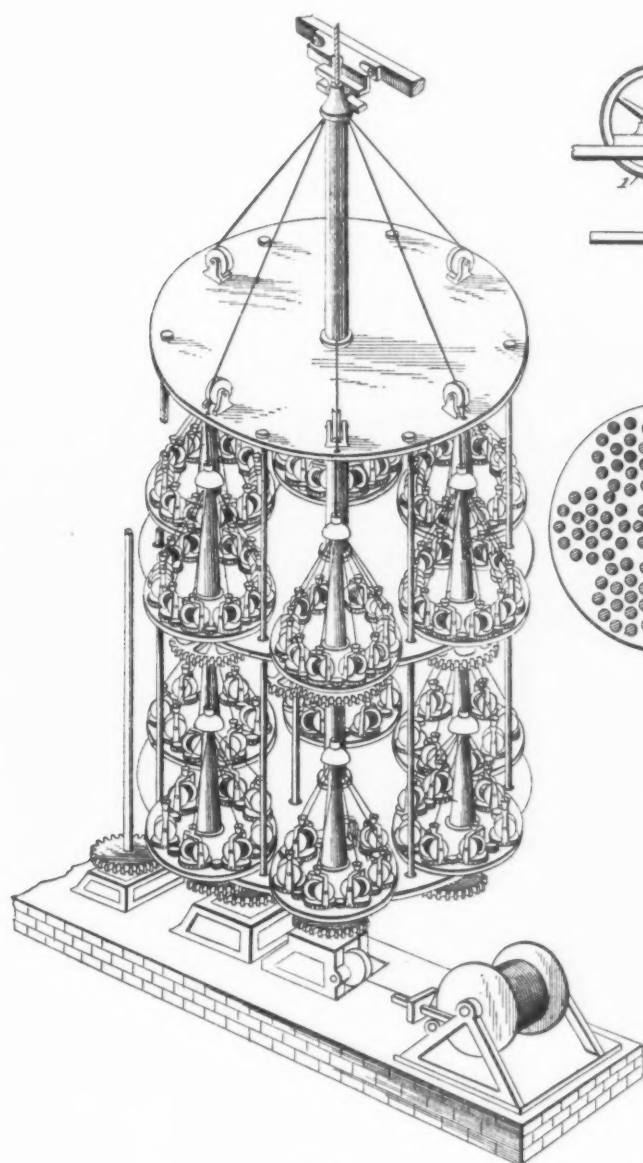


Fig. 1.

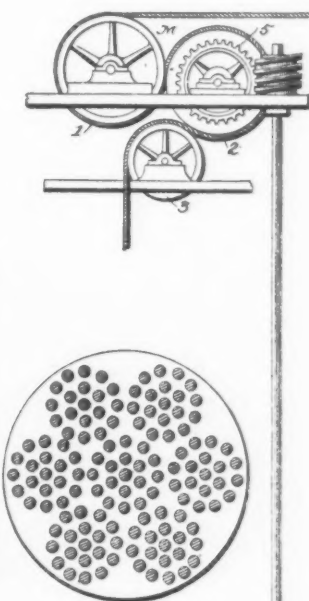


Fig. 4.

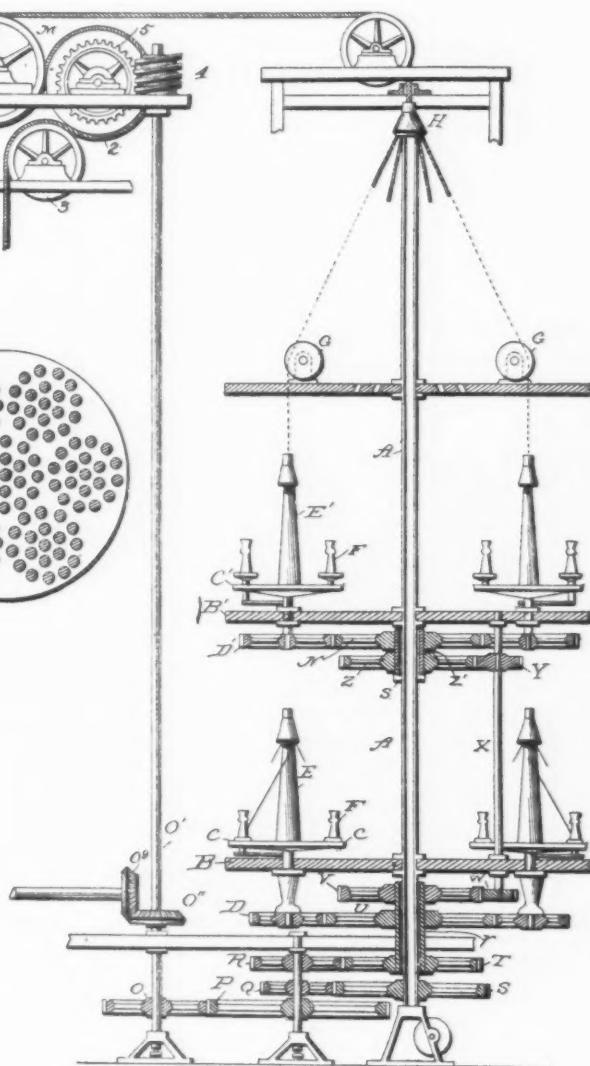


Fig. 2.

#### MACHINE FOR MAKING WIRE ROPE.

much to expect, in view of the rapid strides already made, that in the future further improvements and modifications will enable aluminium to be produced and sold even at a lower price than appears at present possible.

Two bids were opened at the Ordnance Office, War Department, for furnishing the forgings for a 10-inch steel rifle. The Midvale Steel Company, of Philadelphia, offered to deliver in three months the forgings for the breech mechanism and other forgings at 36 cents a pound and the hoops at 30 cents a pound. The Bethlehem Iron Works offered to furnish in four months the forgings for the breech

anism for rotating the central shaft and imparting rotary motion to the turntables, and which is the invention of Henry Root, of San Francisco, Cal. At different heights about the hollow vertical shaft A are platforms B, the number of which depends upon the size of the strands to be made. To each of the turn-tables C, shown enlarged in Fig. 3, is imparted a rotary motion on its own center, in addition to the primary revolution which all have about the central shaft. Upon each turn-table are the spool and frame F carrying the wire. These frames are carried by shafts mounted in the turn-tables and are rotated in order to keep the face of the wires always in the same direction to lay them up straight. The parts above de-

scribed and their movements are those common to this class of machines, and it is evident that by the rotation of the turntables on the lower platform about their own axes the wires are laid up to form strand cores. The rotation of the turntables on the upper platform lays up a series of wires around these cores to form strands. By the revolution of all the turntables about the central shaft the strands are laid up to form the rope and by the rotation of the spool-frames on their own shafts the wires are laid up straight in the strands.

The upright-shaft O' carries the bevel-gear O' and the gear O. The latter meshes

carries another gear, N, which drives the turn tables through the gears D'. The motion of each spool-frame upon its own axis is acquired through two eccentrics, *m m*, for each turn-table loosely fitted upon the central shaft or axle of the turn-table at right angles, the lower eccentric being firmly secured to the platform and the upper eccentric being secured to the lower, so that the shafts of the turn-tables rotate with the eccentrics which accompany the platforms about the main central shaft A. The vertical shaft of one spool-frame on each turn-table extends downwardly, and is provided with a double crank, *o o*, attached by crank-rods and straps *u* to the eccentrics. It is obvious that at each revolution of the entire machine the spool-frame thus acted upon will be rotated axially. In order to act upon the other spool-frames a gear, *w*, is placed upon the actuating-spool, and upon the other spools are placed similar

the shaft O', which is driven by the bevel-gear O<sup>o</sup>. Fig. 4 is a transverse section of the rope as formed.

#### The Armor for the Texas.

A Washington correspondent writes: An advertisement issued by the Navy Department inviting proposals for furnishing about 661 gross tons of steel plates, for the armor of the battleship *Texas*, marks the end of a controversy that has been going on within the Department for some time. The plans for the *Texas* were purchased by Secretary Whitney in England, and were given to Naval Constructor Bolles, at Portsmouth yard, to execute. It was the belief in the Bureau of Construction and Repair that the *Texas*, if built according to the plans, would not carry her full weight, estimated at 6300 tons at load water-line, but would

will be opened at the Department for furnishing the materials to be used in constructing the monitor *Amphitrite* at Portsmouth Navy Yard; and for furnishing machines and tools required by the Bureau of Construction and Repair at the navy yards in Brooklyn and Portsmouth.

**Composite War-Ships.**—The British man-of-war *Tourmaline*, now in port, has been visited by quite a number of people interested in ship-building, it being known that she and her sister ship, the *Opal*, were the first composite-built vessels in the British Navy. In the composite system of construction the frame-work inside of the skin, including frames, beams, keelsons, stringers, shelf-pieces, water-ways, transoms, &c., is of iron and arranged nearly as it would be in an ordinary iron-built ship, the frames and beams being of the same kind and dimensions and spaced the same distances apart, with bulkheads of the usual number and construction. The keel, stem, outside planking and decks are of wood. The planks are put on in two courses, laid fore and aft. The first course is secured to the iron frames by  $\frac{3}{4}$ -inch Munz metal bolts tapped into the iron, having also lock-nuts on the points inside. The bolts have screw-driver heads and are screwed home against a shoulder, so as to leave the head below the surface of the plank, the cavity over the head of the bolt being filled with white and red lead so as to prevent leakage. The planks on both sides, as well as the iron, are carefully painted. After the first course of planks has been caulked between the joints with oakum the second course is laid on it, breaking joints with the planks of the first course. The constructors employed estimate the strength of one of these well-built composite vessels to be from 40 to 50 per cent. greater than the strength of a wooden vessel of the same dimensions and weight, but it is inferior to that of iron.

#### New Railroad Shops.

The Pennsylvania Railroad Company have decided to increase their works at Altoona. A new site has been chosen for a large number of shops to be erected, about two miles from the present works. There will be erection, boiler, machine and blacksmith shops, boiler-house, electric and hydraulic houses, office and store-houses, paint-shop and paint store-house. The works will be large enough to employ between 600 and 1000 men. These new works are to be used only for the making of locomotives, and all the repairing will be done at the old shops. The capacity of the new works at first will be 150 locomotives per year and will be capable of being extended to 500. It is also contemplated to erect another large foundry. All flanging and shearing machines, hydraulic presses and cranes for lifting will be of the latest designs, and where steam is now used hydraulic presses will be the motive power. These buildings will be only one story high, except the machine-shop and the office and store-house, which will be two stories in height. The ground will be about 2200 x 780 feet. An order for 17 locomotives of Class P pattern has been received for the united railroads of New Jersey. There is also an order for 15 Class O locomotives. The engineering and drafting department is getting up a new method of making a locomotive. It has always been the custom heretofore to build a locomotive first and then find out its steam-pressure. Now they are making the indications of the amount of pressure required and from this drawing they will build the locomotive. This way of getting up a locomotive is something new in this country, though it is the system worked on in Europe. The experiment is looked forward to with a great deal of interest.

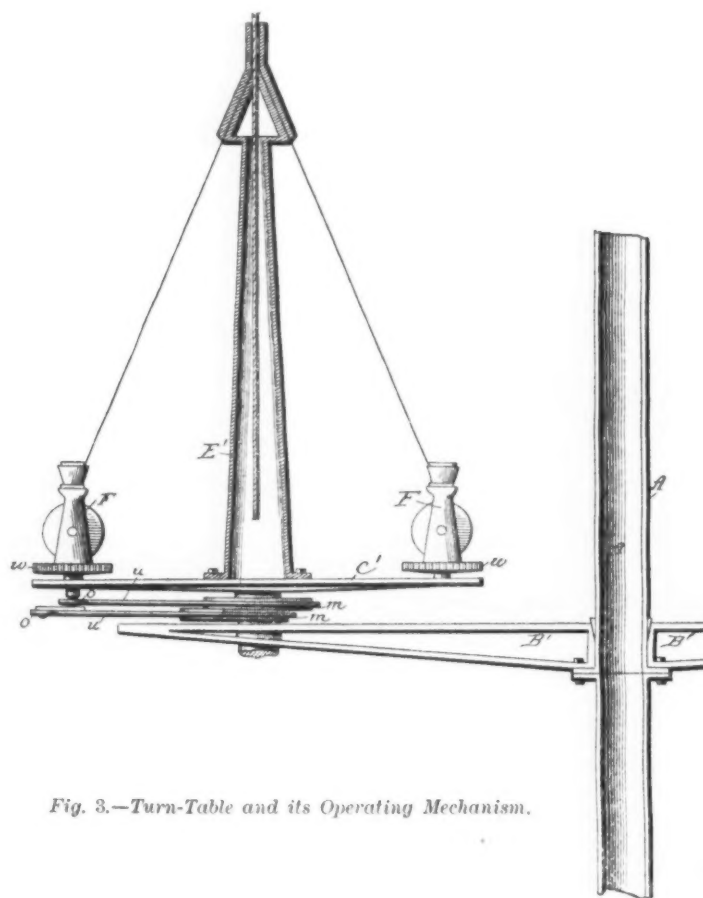


Fig. 3.—Turn-Table and its Operating Mechanism.

gears. Between these are gears establishing the complete chain.

The top of each of the spool-frames is made cup-shaped to receive a cone which fits loosely. The wire is carried up through the cup between its side and the cone. The weight of the latter keeps the wire taut while it travels around the surface of the cone as the machine rotates. Upon each turn-table of the lower platform is the usual extra spool with a wire leading into the hollow shaft E near its top, Fig. 2, as a central wire, and six other spools upon each table, the wires of which, by the rotation of the turn-table, lie up about the central wire to form the strand-cores for the wires of the upper turn-tables, which, laid up on the cores, form strands. These strands pass over the pulleys G to the perforated block or laying-head H on top of the central shaft A. A hempen cord passes up through the hollow shaft from the reel shown in Fig. 1 and forms the core of the rope. The mechanism shown at M, Fig. 2, is intended for drawing off the completed rope, power being obtained from

sink so deep that her rate of speed would be seriously interfered with, even if her gun-deck did not go below water. This opinion was shared by other officials in the department also. But Constructor Bolles was confident that the calculations of the English designer were correct, and that she would float on the level he had marked out for water-line. The question whether or not the *Texas* should be built according to the plans furnished has been under consideration some time by Secretary Tracy. It was suggested that the vessel be lengthened 15 or 20 feet, thus increasing her buoyancy, as a compromise, and it was the opinion of some of the officials that this would be done. But the publication of the advertisement is taken to mean, about the Department, that Secretary Tracy has determined to have the plans which were purchased by his predecessor carried out. The bids are to be opened October 1, and the successful bidder will be required to deliver the plates at Portsmouth Navy Yard within from 30 to 60 days from that date. On the same date, also, proposals



## MANUFACTURING.

### Iron and Steel.

The new puddle-mill of the Ellis & Lessig Steel and Iron Company, Limited, at Pottstown, Pa., has been completed and was put in operation on Wednesday, the 14th inst. There are 12 new furnaces. The old mill had eight furnaces, and the entire mill, with its 20 furnaces, is the largest puddle mill in Pottstown, though not as large as the upper and lower mills of the Pottstown Iron Company together.

A press dispatch from Huntington, W. Va., under date of the 15th inst., says: "A short time ago the Aetna Iron Works, at Ironton, Ohio, made application for a receiver, and the president of the company was appointed. To-day the Creek Iron Company and the Chapin Mining Company, both heavy creditors of the Aetna, filed answers alleging fraud in securing the receivership, and that the receiver was conducting the business of the company in an irregular manner with an intent to defraud the creditors. The Aetna's works are among the largest in Eastern Ohio."

The directors of the Reading Iron Company, of Reading, Pa., which has been organized out of the Reading Iron Works, met in that city on the 14th inst., and elected G. F. Baer president, and F. C. Smith manager and treasurer. The rolling-mill department has resumed operations, and the entire plant will be in operation by October.

Ellen Furnace, of the Wheeler Furnace Company, at Middlesex, Pa., which has been idle for some time undergoing repairs, has again resumed operations.

The new 26-inch mill recently erected by Jones & Loughlins, Limited, at Pittsburgh, was put in operation during the present week, giving employment to about 150 additional men. One of the many improvements made in the mill is the method of carrying the ingots from the shears to the rolls by means of a cable-car. In the majority of plants there are large rollers set on a stand over which the billets glide. The principle of the cable-car is the same as that used in street railways. Each car carries a single ingot, transporting it from shears to rolls. On the opposite side of the rolls another car carries the rolled metal out to the yards. The cars are small and easily handled.

We are informed that the Lebanon Iron Company, the Lebanon Rolling Mills, the Lickdale Iron Company and the West Lebanon Rolling Mill Company, Limited, all of Lebanon, Pa., have advanced the price paid for puddling from \$3.50 to \$3.85 per ton. The advance went into effect on the 12th inst.

The Rock Hill Iron and Coal Company, of Orbisonia, Pa., are making some extensive improvements at their blast-furnace plant. They are taking down a Kent stove, which has been in use for 12 or 13 years, and are replacing it with one of the Pollock design. They are also dismantling 48 Belgian coke ovens and are erecting 32 ovens of the bee-hive type in their place.

C. Huston & Son, proprietors of the Lukens Rolling Mills, at Coatesville, Pa., are engaged in the erection of a plate-mill to contain a three-high plate-train. The top and bottom rolls are 120 x 34 inches, and the intermediate one is 120 x 20 inches, all chilled. The A. Garrison Foundry Company, of Pittsburgh, have the contract for the rolls, and Mackintosh, Hemphill & Co., Limited, also of that city, have the contract for the balance of the machinery, with the exception of the engine, which will be of the Corliss horizontal type, and will be built by Robt. Wetherill & Co.,

of Chester, Pa. The mill will be of massive proportions, the roll-housings alone weighing 26 tons each, and the spindle will be 20 inches in diameter. The mill will also contain a patent automatic Aiken hydraulic charging and drawing crane, hydraulic automatic tables, &c. It will also have massive Morgan shears with knives 110 inches long. The mill will be the largest one in this country for rolling steel plates and the only large steel-plate mill east of the Allegheny mountains.

T. H. Brooks & Co., Cleveland, manufacturers of architectural iron-work and steam-heating apparatus, have just made a contract with the Cleveland City Railway Company for all their castings.

The West Lebanon Rolling Mill Company, Limited, of Lebanon, Pa., owing to the fact that many of their customers persist in directing letters to "West Lebanon" (a village in Western Pennsylvania) instead of Lebanon, and also to the confusion caused by the similarity of the names of the several rolling-mills of their city, have decided to change their name to West End Rolling Mill Company, Limited. The capital, management, &c., remain the same as heretofore—the name simply being changed. They inform us that at present they are very busy in all departments. In the chain-works they are adding a number of fires to accommodate a constantly-increasing trade on ship cables and dredging chains.

The statement in our issue for August 8 that Girard Furnace, at Girard, Ohio, was out of repairs is incorrect. This furnace was put in blast November 27, 1886, and it has been in continuous blast ever since, with the exception of about eight weeks, when it was banked on account of a coke strike, and from that time until the 1st of August it has made upward of 140,000 tons of metal. The furnace is in good condition, and making from 1100 to 1200 tons per week. Some six weeks ago one of the blowing-engines was broken and the furnace was run with only one engine for four weeks, which probably gave rise to the report that it was out for repairs.

John McLaughlin, manager of the Chicago office of the Andrus Brothers Company, manufacturers of bar, band, hoop and sheet iron from Haselton pig-iron, informs us that they have added to the bar-mill department of their works the best cold-straightening machinery to be found, and are now prepared to fill orders promptly for cold-straightened shafting bars, either iron or steel.

The Pennsylvania Steel Company continue to experiment with the basic process in a 5-ton open-hearth furnace which shows some peculiarities of design. It is similar to a Dank's puddling-furnace, a horizontal cylinder, which, however, is not rotated, although it can be revolved.

The strike at Carrie Furnace, Pittsburgh, is ended, and furnace No. 1 is in operation with a full quota of men, and No. 2 will go in blast on Friday or Saturday. The Penn Iron Company, of Lancaster, Pa., resumed work on Monday morning after 18-weeks idleness.

An experimental heat was made recently in the new converter of the Chester Steel Casting Company, under the Bookwalter system.

The Sheldon Axle Company, of Wilkes-barre, Pa., inform us that there is no truth in the report that they were about to commence the welding of axles by electricity.

At a recent meeting of the directors of the Reading Iron Company, held at the office of the firm in Reading, Pa., the following officers were elected: President, George F. Baer; general manager and treasurer, Frank C. Smink; clerk, T. O.

Yarrington, Jr. The different departments will be in charge of the following: Furnaces, Albert Broden; rolling mill, Simon Seyfert; tube works, E. W. Wolf; Scott Works, John G. West.

The Monongahela Furnace Company, of McKeesport, Pa., will let the contracts during the present week for the grading, foundations and tracks for their furnace plant. It is the intention of the company to erect two blast-furnaces with a combined capacity of about 400 tons per day.

The Pennsylvania Steel Company, of Steelton, Pa., have notified their employees of an increase of wages. The advance is from 2½ to 10 per cent., and restores the wages paid before the reduction several months ago.

The nail factory of the Jefferson Iron Works, at Steubenville, Ohio, which has been idle for a short time, resumed operations on Friday, the 16th inst.

The first cast of open-hearth steel was made at the Latrobe Steel Works, at Latrobe, Westmoreland County, Pa., on Wednesday, August 7, one of the 15-ton furnaces having been completed. Another furnace of the same size will be completed soon. This is a wholly new plant, the building of which was commenced in 1888. The product of the open-hearth plant will be rolled into tires for locomotive and car wheels. The branch office of the works is at No. 251 South Fourth street, Philadelphia. The officers are Marriott C. Smyth, president; Walter H. Bryant, secretary; Ellwood W. Kimber, treasurer; Guiliam Aertseen, manager; Julian Kennedy, chief engineer, and J. K. Griffith, superintendent.—*Bulletin*.

Shoenberger & Co., proprietors of the Juniata Iron and Steel Works, at Pittsburgh, signed the Amalgamated Association scale on the 13th inst., after several conferences. It is practically the same as that proposed by the association, differences in some directions being made up in others, and there is no change on the basis. Owing to a change in the method of handling the product in the Bessemer plant, four hookers in the blooming-mill are done away with, two of them, however, going on as wrench men; and in the converting department there are three cinder men instead of two, as heretofore; and instead of a metal-wheeler being detailed in charge of the wheelers, the same number are retained, with relief from the duty of weighing, &c., by the appointment of an additional man to be in charge. The engineer gets a small advance in wages. Because of a peculiarity of this plant the following is included: For groups with bottom cast, all men to get 1½ weight, except five pit men and two regulators; one stopper-maker to get double weight.

The Kittanning Rolling Mill Company, of Kittanning, Pa., signed the Amalgamated scale on the 12th inst., and the works of the company are now in operation. The firm manufacture muck-iron only, which is sold in the Pittsburgh market.

### Machinery.

The Pillings Mfg. Company, of Baltimore, have been chartered by G. T. Pillings, J. H. Phillips, Daniel Hockaday and others to manufacture engines, boilers and other machinery. The capital stock is \$100,000.

A fire which originated in the roof of Pierce's iron foundry, in Astoria, last Saturday night, extended to the foundry of Dole & Co., and all the structures, being of wood, were soon destroyed. Pierce's foundry was devoted to the manufacture of iron railings and ornamental iron-work, and that of Dole & Co. to the manufacture of castings. The loss on building and contents to the former was about

\$14,000 and to the latter \$15,000, partially insured. Loos & Co., owners of the chemical works, lost about \$4000 by damage from fire and water, which is partially covered by insurance. The loss of Dole & Co. includes many valuable patterns.

The Hartford Machine Screw Company, Hartford, Conn., are erecting two new buildings, one 260 x 45 feet, two stories, with a fire-proof tool-room connected, and another 210 x 35 feet, two stories, the lower floor of which is to be used as a warehouse, and the upper rooms for the manufacture of screws and small parts for watches. The additions will give one-third increase of capacity.

Messrs. Dean Brothers Steam Pump Works, Indianapolis, Ind., report the shipment of a carload of steam-pumps, oil, water and agitating machinery to Louisville, Ky., and that they are present employing a larger force than ever, while the demand for their goods seems to be made up of smaller orders than in previous years. Good prices prevail.

The new extensions being built by the San Antonio and Arkansas Pass Railroad are being equipped with pumps, boilers and tank-valves manufactured by the Laidlaw & Dunn Company, of Cincinnati, Ohio.

L. S. Starrett, Athol, Mass., manufacturer of machinists' fine tools, is adding another story to his factory and in other respects improving the plant.

The Cushman Chuck Company, Hartford, Conn., are building a two-story brick extension to their shop, 50 x 40 feet; also a new office building.

Messrs. Greenlee Bros. & Co., Chicago, manufacturers of wood-working machinery, have just completed their new four-story and basement brick building and finished putting their machinery in place. The building occupies Nos. 227, 229 and 231 West Twelfth street; has pressed brick front, with Connecticut brown-stone pillars, and plate-glass on the first floor. The frontage on Twelfth street is 75 feet, extending back 127 feet to an alley 20 feet wide, on which their foundry fronts. The stories are 13 feet in the clear, except the basement, which is 8½ feet, well lighted on three sides by large windows, and on the fourth side by a light shaft, 12 x 70 feet, covered with heavy glass. The basement floor is concrete, and the rear half used for engine-room, 18 x 25; boilers, 18 x 30, and blacksmith shop, 25 x 30. The front part will be used for storage. The alley immediately in the rear of the basement has been tunneled and brick-arched, 18 feet deep and 70 feet long, giving storage for 200 tons of coal, which is dumped through the holes in the middle of the alley right into the bins below and directly in front of the fire-boxes. The power is furnished by two new boilers of 125 horse-power each and a new Hamilton-Corliss engine of 200 horse-power. The engine-room is well lighted and ventilated by the light shaft, which extends from the roof to the basement. On the first floor are the offices, 25 x 80 feet, finished in oak and cherry. The balance of the space is used as a salesroom. The iron-working machinery is on the second floor, and the wood-working machinery and pattern-shop on the third floor. Both floors have convenient tool-rooms, closets and wash-troughs. At present the fourth floor is unoccupied and may be leased for a short time. An 8 x 14 feet platform elevator, capacity 9000 pounds, driven by two 8 x 10 steam-engines, is used in handling their machinery between floors, and an overhead track and crane is provided between machines where necessary. It is claimed that the building will carry 800 tons to the floor. Power is transmitted from the main shaft

in the basement to second and third floors by an eight-strand rope belt, and by another rope belt from the main shaft on the second floor to a shaft 100 feet distant, which drives the blower, tumbling-mill and emery-wheels in the foundry. The building will be heated by the Sturtevant system of passing fresh air over steam coils and then through pipes and registers to all parts of the building. The heating apparatus will be located in a room 8 feet high, 25 x 30 feet, immediately over the boilers. The building will be lighted by 30 arc and 200 incandescent burners run by two dynamos. The firm are working 60 men in the foundry and have a total of 200 employees on the pay-roll. The new building was began last April, and from that time until last week part of the foundry was used as a machine-shop. Their trade has been excellent all summer and is steadily on the increase. Last week they shipped two carloads of sash, door and blind machinery to Tacoma, Wash. Ter., and the week before made a large shipment to Australia. They have orders in hand from nearly all parts of the United States for their self-feeding saw-tables and automatic cut-off machines.

C. F. Richardson, Athol, Mass., has recently completed a handsome office building adjoining his shop. The latter also has been enlarged to meet increasing demands for the specialties in fine tools.

On Wednesday, the 15th inst., a receiver was appointed for the American Machine Company, of Findlay, Ohio. The assets of the company are \$60,000 and the liabilities in the neighborhood of \$50,000. The nominal capital of the company is \$100,000, of which only \$65,000 has been sold. The receiver was authorized to run the works and finish the machines on hand.

Owing to the death of D. A. Newton, for a number of years manager of the Athol Machine Company, Athol, Mass., the following changes have been made in the list of officers: George T. Johnson, treasurer and manager; A. Bangs, secretary; S. H. Bellows, superintendent; R. S. Bridgeman, clerk.

The fire which occurred recently on the fifth floor of the building No. 72 Warren street, New York, does not interfere particularly with the business of E. P. Bullard, manufacturer of machine tools. They will suffer a water loss only, which is amply covered by insurance. Mr. Bullard informs us that he can take care of any orders which may be sent.

A. L. Ide & Son, of Springfield, Ill., have received a contract from the city of Chicago for furnishing and erecting engines, boilers and machinery complete for four electric-light stations for lighting the streets. Sixteen Ideal engines of 125 horse-power each will be required. Buildings will be erected with room for doubling the capacity of each in the near future.

The Clifton Furnace Company, of Ironaton, Ala., have sold their Jenifer Furnace and will build another charcoal stack at the above-named place. After a careful investigation of the various blowing-engines they have decided on the plans recently published in *The Iron Age* and designed by William Tod & Co., of Youngstown, Ohio, and have accordingly placed their order with that firm for two of the engines. The last-named firm have recently received the eleventh order from Carnegie, Phipps & Co., Limited, of Pittsburgh, for Porter-Hamilton engines.

The demand for the automatic compound engine recently placed on the market by the Westinghouse Machine Company is such that the company are actually selling entire shop orders of different sizes before their manufacture is even commenced. Up to the present time they

have built and sold seven different sizes of these compound engines, ranging from 35 to 150 horse-power. They have also been compelled to add two additional sizes (viz.: 200 and 250 horse-power) to their list, and are now working their pattern and foundry department day and night in order to get the first shop orders completed promptly. Already they have actual orders for 12 of the 200 horse-power size, and several orders for the 250 horse-power.

The National Pulley Covering Company, of Baltimore, Md., recently received a communication from Henry McShane & Co., iron and brass founders of that city, in which the following statement is made: "On August 2 we put on two of your 'covers'; the main pulley was 26-inch diameter, 9-inch belt, making 105 revolutions per minute, and the counter pulley, 36-inch diameter, 9-inch belt, making 100 revolutions per minute. We now find that since putting on your covering the main pulley makes 133 revolutions per minute and the counter pulley 120 revolutions per minute."

#### Hardware.

Edward S. Hotchkiss, Bridgeport, Conn., manufacturer of the Hotchkiss metallic self-setting mouse and rat traps and other hardware, in order to supply the large and increasing demand for his goods, has greatly increased his manufacturing facilities, having doubled his floor-space, put in new machinery as well as new talent, and now has exceptionable facilities for the manufacturing of all parts of light machinery, tools, dies and hardware specialties. Mr. Hotchkiss makes drawing and blanking a specialty, and invites correspondence.

The National Mfg. Company, Lancaster, Pa., are preparing to put on the market a line of hardware, for the manufacture of which they are constructing their factory. They are owners of patents relating to meat and vegetable slicing machines, washing-machines, thill-caps, whiffletree clip-irons, fifth wheels and other hardware specialties.

The Union Steel Screw Company, of Cleveland, Ohio, are contemplating improvements and additions to their plant to the extent of \$20,000. An additional boiler-house and work-shop will be built and the plant throughout will be greatly improved.

Last summer the Bryden Horseshoe Company, of Catasauqua, Pa., becoming cramped in their old quarters, erected a new works for the manufacture of the well-known Bryden calked and frog-pressure shoes. So popular have these shoes become, especially among horse-railroad men, that they are now commencing the erection of a new plant that will more than double their present capacity. In addition to the forged shoes made under the Bryden patents, they will manufacture plain-rolled shoes of both fibrous steel and iron. They expect to have their new plant in operation before the new year comes in. They are now having built a train of rolls to roll their own iron. They will employ about 100 additional hands.

#### Miscellaneous.

J. W. Moore & Co., of Pittsburgh, extensive coke operators in the Connellsville region, agreed to pay the 12 per cent. advance to their employees, and their works are now in operation.

The Taylor gas-producers have been used with such success by the Brooklyn Sugar Refining Company that they are now being put into the large refinery which is being built for Mr. Speckels in Philadelphia.

The journals of the steamship City of Paris, which now holds the record for quick time across the Atlantic, are pro-



vided with Magnolia metal. This fact is peculiarly pertinent in this case, since one of the advantages which has been long claimed for this anti-friction metal is that "it increases the motive power."

A press dispatch from Youngtown, Ohio, under date of the 18th inst., reads as follows: The natural gas furnished by the Home Gas Fuel Company here having become exhausted, the company are now supplying their customers with fuel gas manufactured from crude oil by the Archer process as a substitute for the natural gas. Six months ago the Archer Gas Fuel Company erected a plant here and have been engaged making experiments and tests in the manufacture of this fuel gas. The tests have been made by the New York expert, P. W. Mackenzie, under the supervision of R. S. Tennant, president, and J. R. Kendall, manager of the company. Last night the gas was turned into the pipes of the Home Company with satisfactory results."

The Pennsylvania Railroad Company have decided to order 1000 more freight-cars, making in all 6000 cars. The reason of this large order is that President Roberts is fully awake to the necessity of having more available rolling stock and not to have the shippers complaining of the want of cars. About three-fifths of the order will be coal-cars and the remainder the box pattern.

The Wilmott & Hobbs Mfg. Company, of Bridgeport, Conn., are putting in a 250-lamp incandescent electric-light plant made by the United States Electric Light Company. The works are now run up to 9 o'clock at night, and it is anticipated that it will soon be necessary to run 23 hours a day in order to get the contracts out promptly. The works are very busy in cold-rolling of steel and the manufacture of light and heavy press, drop and draw-bench work made from steel, copper and brass.

The Nason Mfg. Company, 71 Beekman street, New York, favor us with a copy of their illustrated catalogue dated August, 1889. The publication is a serviceable and valuable one of its kind, for, in addition to attracting attention to the manufactures of this company, it also contains much valuable information. The first pages are devoted to illustrations and price-lists of iron pipe, cut and lap-welded, spirally-riveted iron fittings, &c., after which box-coil radiators are referred to. Steam fittings of various kinds, including valves of all sorts, are next in order, several pages being devoted to cocks and steam-whistles. An extensive line of gas-burners is illustrated, followed by cast-iron pipe and fittings, pumps, hydrants, plumbers' brass-work, wash-basins, plumbers' tools, &c. Steam-engines, governors, boilers for power and heating purposes, radiators, feed-pumps, steam-traps, globe-valves, &c., complete the contents of the catalogue proper. At the close a chapter containing 30 to 40 pages gives general and practical information pertaining to steam and hot-water heating, which the Nason Mfg. Company have compiled from several well-known and standard works on the subjects. Altogether the book gives much information of practical value for steam-fitters, while the plumbing and other trades will be interested in the other pages. Accompanying it is a manufacturers' trade sheet of discounts dated August 1.

In the Mexican State of Chiapas, at a point ten miles from the Pacific Coast, every dwelling is built of solid mahogany and the fire-wood is cedar, and yet the lands can be bought for \$1 an acre. There is a chance there for progressive Americans.

## THE WEEK.

The Superintendent of Public Works at Albany advertises for proposals for an iron bridge over the Erie Canal at Rochester, for which an appropriation of \$16,000 is made, and for changing the machinery of the lift-bridge over the Erie Canal at Brockport to water-power; \$2650 appropriated.

A letter from the Mexican capital again speaks of faulty packing as the great drawback in seeking to introduce merchandise from the United States. The writer says goods "are put up in too large and too heavy packages, and when we come to pay duty on the goods themselves we find that we pay according to the gross weight of the packages, and that very often the weight of the box is four or five times more than that of the goods contained in them."

The ship-yards at Bath were visited last week by President Harrison, who said that in every way possible, whether as a citizen or public officer, he would endeavor to promote the rebuilding of our American merchant marine and the restoration of that great carrying trade that we once possessed in every sea.

Bismarck was made the capital of North Dakota.

The Chinese Government has at last placed itself in an attitude more favorable for railroad construction. Chang Chi Tung, lately appointed to the vice-royalty of Liang Hu, is known to have advocated the extension of the railroad to Peking from the iron mines, despite the popular clamor against this proceeding, and it is reported that the work will be commenced soon under his directions, a Chinese syndicate, with a capital of 60,000,000 taels, having been formed to carry out the scheme.

Consul-General Way, at St. Petersburg, says that under favorable conditions Russia could supply the whole world with wheat. Speculators in the United States who would "corner" the crop in America are thus reminded that by artificially advancing prices they only close foreign markets against them.

Another oil-tank at Constable Hook was struck by lightning and burned.

The prospects for the restoration of bi-metalism in England and on the Continent, in the opinion of the United States Consul at Marseilles, are distinctly improving, and the conference which is to assemble in Paris in September to consider the subject will meet under circumstances much more promising than before.

The Minnesota State Prison authorities report adversely on the proposition to employ convicts in the manufacture of binders' twine. The cost of plant and material for one year sufficient to keep 75 men employed would amount to \$1,245,000.

The old balance dry dock is to be transferred from the East River to Erie Basin, and the sectional dock is expected when her repairs are finished.

The contract for postal-cards was awarded to Albert Daggett, of New York, and is for four years, beginning October 1. The estimated number of cards to be required is 2,000,000,000, at a cost of \$800,000. Allowing for an increase of about 97 per cent. in weight, the cards will be about one-third cheaper than the old ones. About 7000 tons of paper will be consumed, or an average of about 6 tons for each working day.

An invention called the Hatch Lock is an apparatus to be used in telegraphy, by means of which all connection with a telegraph wire can be cut off at all interme-

diate points between the sender and receiver. The patent is equally applicable to the telephone wires and their connections. A company with \$2,000,000 stock has been formed in Kansas City and New York to place the patent.

The South American mail, Panama papers assert, could be sent much quicker via the Isthmus and thence by coastwise steamers to Valparaiso than by the Atlantic route via London.

The inventor of the hand-pump, W. H. Newton, died at Superior, Wis., Aug. 13.

A mysterious gas explosion in McCabe's crockery store, on Grand street, this city, on Friday night, is attributed by the Fire Marshal to the intentional removal of a cap from a pipe, allowing the gas to escape into the cellar. Hence the explosion.

Gus Winkle, contractor for the Texas State capitol building, was fined \$64,000 by the United States Court in Austin for importing 64 granite-cutters from Europe.

The application of Receiver Gray, of the North River Sugar Refinery, for an injunction to restrain the Sugar Trust from transferring or disposing of any of its assets by paying a dividend on its capitol stock was denied on Monday by Judge Ingraham. This decision is on the appeal from the judgment of Judge Barrett, annulling the charter of the North River Company because they joined the Sugar Trust. Judge Ingraham gives Receiver Gray leave to renew the motion for an injunction if he ascertains any facts that indicate an intent by any one of the defendants to transfer any of the property held by them under the trust agreement, and leave to renew upon the decision of the General Term.

A. J. Drexel, of Philadelphia, has made known his purpose of establishing in that city the Drexel Industrial Institute, with a full corps of instructors and facilities for the training of 1000 boys in evening classes and an equal number of girls in the day time. The working operations of the college will probably be somewhat similar to those of the Cooper Institute, in New York. A large lecture-hall, capable of seating at least 2000 persons, and an extensive reading-room, provided with all the useful technical and other books and appropriate periodicals and newspapers of the day, will be features of the plan. In all, Mr. Drexel expects the foundation lands and buildings and endowment of the institute may cost \$1,500,000.

The monthly bonus received by the Pacific Mail Steamship Company from the Transcontinental Railway Association has been increased from \$65,000 to \$75,000. The steamship company desire that it should be understood that this amount is not a subsidy, but compensation for a specific amount of space for freight occupied by them. It is well known, however, that were they not competitors for California freight they would receive nothing from the railway lines.

A company has been incorporated in Oregon, with a capital of \$5,000,000, to build a railroad to Seattle, Wash. Ter., and another company with \$2,000,000 will build a bridge across the Columbia River at a point near Vancouver.

The taxable valuation of Philadelphia for 1890 is \$685,407,618, a gain of \$20,000,000 this year.

Woolen fabrics and other products of the mills in Bradford, England, are being exported to the United States at the rate of \$25,000,000 per annum, which is far in excess of previous years. The duties that devolve upon the consular office are arduous.

Canadians are solicitous respecting the location of the boundary-line on the Alaskan frontier, and hope is expressed in

official circles that a joint commission will be appointed to act without delay. At present there is really no agreed-upon boundary, Canada maintaining that the United States has extended its sovereignty into Dominion territory. Miners in the disputed region, comprising a rich gold district on the Yucon River, have successfully defied the jurisdiction of both Governments, rendering the administration of justice both uncertain and ineffective.

The assessors in the large manufacturing city of Newark, N. J., report a valuation of \$100,405,000. The population is placed at 180,000.

The Smithfield bridge or viaduct in Pittsburgh is to be enlarged for cable-traction purposes at a cost of \$200,000. The contracting engineer is Gustave Lindenthal.

W. L. Scott, of Pennsylvania, representing the Spring Valley Coal Company, has just completed the purchase of 40,000 acres of coal lands in Bureau, La Salle and Putnam counties. By purchasing the bottom lands along both sides of the Illinois River for six miles the riparian rights are obtained for nothing. This is the largest coal field in the West owned by one syndicate.

The Treasury Department has refused the application of an Oswego, N. Y., firm for permission to give bond for the re-exportation of a propeller-wheel to be attached to a Canadian vessel at an Oswego dry-dock. The Department holds that as the wheel was intended to become a part of the vessel no entry for its exportation could be perfected with due regard to the conditions imposed by law.

The plans for the great dry dock and ship-building enterprise, now in course of construction at Newport News, Va., by the Chesapeake Dry Dock and Construction Company, of which C. B. Orcutt is president and Collis P. Huntington, of New York, the principal owner, and which will involve an expenditure of upward of \$1,500,000, are being prepared by Otto C. Wolf, of Philadelphia. A dry dock 600 feet long, is already completed. A machine-shop, 308 x 50 feet, and completely filled with tools recently purchased, is also finished and in working order. In addition to these there will be a tool-shed, 120 x 208 feet; a ship blacksmith shop, 280 x 40 feet; a bending platform and furnace, 100 x 130 feet; a three-story brick carpenter, joiner and pattern shop and molding loft, 306 x 60 feet; a blacksmith shop, 306 x 60 feet; a brick and iron boiler and machine shop, 100 x 306 feet, with a smaller machine-shop for fittings, &c., adjoining, 50 x 306 feet. The gentlemen concerned are interested in the New Orleans, Texas and Brazilian steamship lines, for which they will build, and their plan is to engage in a general business, receiving contracts either for the merchant marine or for the Government.

Charles H. Field, sole surviving partner of the firm of Guy C. Hotchkiss, Field & Co., iron founders, contractors, manufacturers and dealers in carriage materials at the foot of East 104th street and No. 63 Wall street, New York, and at No. 423 Kent avenue, Brooklyn, made an assignment on the 14th inst. to James Martin, giving preferences for \$11,166, as follows: Three notes made by the Golds Heater Company, endorsed and discounted by the firm, \$9000; Johnson Foundry and Machine Company, \$1000, for castings, &c.; Payne, McGuire & Co., lawyers, of Brooklyn, \$1166. This is the firm in which Maurice B. Flynn was a partner until his death a few weeks ago.

The United States consul at St. Petersburg, C. H. Way, reports a remarkable improvement in the financial condition of

Russia within the past year. Unexpectedly, the steadily increasing deficit of several years is now succeeded by a surplus. The paper ruble has risen in value from 37½ to 52½ cents within the space of 12 months. An enormous issue of bonds bearing 5 per cent. interest has been converted into 4 per cent. bonds on the most favorable terms. The subscriptions for the new bonds were largely in excess of any satisfying allotment, and demonstrate the fact that not only is it in the power of the Minister to convert the entire debt of Russia into a lower-interest-bearing issue, but that foreign capitalists are eager to invest in a security which two years ago was the foot-ball of foreign bourses.

The Baltimore and Ohio Railroad Company are supposed to be maneuvering for the acquisition of the Girard Point storage property below Philadelphia.

## Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., August 28, 1889.

The illness of Assistant Secretary Tichenor giving indications of having taken a serious form which will prevent him from resuming his post for a long time, that portion of the official duty of the Department which was under his charge relating to the tariff has been assumed for the present by Secretary Windom. The investigation of the silver *vs.* lead ore controversy will therefore not be delayed longer than the regular course of official inquiry might be expected to wend its wearying way to a conclusion. The papers are all in the hands of the Solicitor of the Treasury Department and are being examined. As soon as this stage of consideration shall have been completed he will submit his report to the Secretary, and upon that the Department will announce its decision.

It is evident that this decision will make a radical change in the customs regulations governing the importation of these Mexican ores. The most significant indication of this outcome is the recent letter of the Secretary of the Treasury to the collector at El Paso, Texas, the port of entry of large quantities of these ores, giving directions as to the regulations which shall govern importations of Mexican ores pending the settlement of the controversy. The following is the text of the letter:

SIR: The Department has had under consideration the joint report submitted by Special Agents W. H. Williams and W. P. Hudgins, upon the question of the importation of mineral ores from Mexico, with special reference to the accuracy and propriety of the existing methods of entry, sampling, and examination of such ores, for the purpose of determining their legal classification by an accurate ascertainment of the characters and properties of the minerals contained in the various importations.

It appears from the report that a practice has grown up of permitting, in the same entry as the product of one mine, the mingled products of several mines possessing different characteristics, and that sampling is conducted in a very irregular manner by what is familiarly known as the "grab process." It is evident that neither of these methods is adapted to a proper execution of the provisions of the general law respecting importations of merchandise, and that a modification is essential to bring its administration into harmony with the requirements of the law. Pending a further consideration, and the determination of the question of the proper classification of those Mexican ores that contain both silver and lead, the following instructions will be observed.

1. The sworn entry shall embrace, in addition to what is now required, a statement of the estimated quantities and values of silver and lead contained in the importation, according to the best knowledge and belief of the importer or consignee.

2. The entry shall further contain a declaration that the importation embraces no mixture of ores or concentrates from different mines.

3. The entry shall also disclose the name and locality of the mine from which the ore has been taken.

4. Upon the arrival at the frontier of cars or other vehicles laden with ores containing an appreciable quantity of lead, they shall be locked or otherwise secured until entry be made and permit granted to unlade.

5. Upon the unlading, and at the time of unlading, the officer of the customs assigned to that duty shall supervise the work, and shall obtain proper and adequate samples from those taken for commercial purposes by the importer or consignee; that is to say, they shall be taken in the manner approved and practiced by miners in the handling and reduction of ores, by thoroughly mixing and quartering every tenth shovel, or more, repeating the operation until the usual commercial sample be obtained.

6. To avoid the detention and expense incident to the unlading and sampling at the frontier, in cases where the cars or other vehicles are destined to an interior port or place without so unlading, they shall be adequately inspected, and if, in the judgment of the collector, the ore is deemed to contain lead in quantities sufficient to make it dutiable, or if the legal classification be held doubtful, appraisalment may be waived and entry made on an estimate of duties, and the goods permitted to proceed to destination under a warehouse and transportation bond, the entry to be ultimately liquidated under an appraisalment based upon the samples selected in the manner above prescribed in paragraph 5.

It is suggested that, in the execution of these instructions care should be taken equally not to unnecessarily detain ores wherein silver so clearly predominates as to fix their character commercially as silver ores, nor to admit without assessment of duty those ores wherein the value of their components of lead appear to exceed that of the silver contained in such ores.

It is advised that in determining the relative value of silver and lead contained in the same ore the value of the silver component, in the absence of more accurate data in the invoice or otherwise, be rated at 95 per cent. of the latest known value of silver bullion in the New York market, that the value of the lead component at the latest known price of bar-lead in the same market, less one cent per pound.

From the information before the Department it is believed that neither difficulty nor hardship will result from the practical enforcement of these instructions; but, if any obstacle shall arise in their execution, you will please report the exact nature and extent of the obstruction, with your suggestions for its removal.

Please acknowledge by special communication the receipt of the instructions, and accompany such letter by a statement of the arrangements made for giving effect to their several provisions. Respectfully yours,

WILLIAM WINDOM, Secretary.

COLLECTOR OF CUSTOMS, El Paso, Texas.

The latest statistical exhibit of the Government shows that during the month ending June 30, 1889, the value of the importation of silver-bearing ores was \$775,968, as against \$516,000 for the same month in 1888, and for the 12 months ending June 30, 1889, \$6,957,719, as against \$5,115,563 for the corresponding period of 1888.

Of the total value, \$6,951,719, the value of importations of silver ore into the below-named customs districts amounted to \$6,206,777, or 80 per cent. These importations contained the following quantities of lead thus admitted free of duty:

	Pounds
Corpus Christi, Texas.....	4,520,739
New Orleans, La.....	2,000
New York, N. Y.....	20,269
Paso del Norte and New Mexico.....	36,997,532
Sabina, Texas.....	14,023,980
Total.....	55,564,550

These figures show to what extent lead ore dutiable is shipped into the United States under the free-list provisions for silver ore.

The new regulations will place the Department in possession of official data which will leave no doubt of the prospective action. As already said in these dispatches, the Treasury Department on the Secretary's decision, when announced, will issue instructions to collectors that all silver ores bearing more than a certain percentage—say five—of lead will be charged lead-ore duties, and ores containing less than that amount shall be admitted free as silver ores.



# The Iron Age

New York, Thursday, August 22, 1889.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.  
CHAS. KIRCHHOFF, JR., - EDITOR.  
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.  
RICHARD R. WILLIAMS - - - HARDWARE EDITOR.  
JOHN S. KING, - - - BUSINESS MANAGER.

## Protective Duties and the World's Fair.

A disposition has been observed in certain quarters to ridicule the New York project for a world's fair in 1892, because of the tariff policy to which this country is committed. As manufactured articles are not admitted into our markets free of duty, it is therefore alleged that it is the height of absurdity to invite foreign manufacturers to exhibit the products of their skill or enterprise on this side of the Atlantic. Some cynical critics of the exhibition scheme go even further than this and allege that our tariff duties have been adjusted at their present rates for the express purpose of keeping out foreign goods, and that we really insult European intelligence when we invite exhibits from abroad. These assertions are only partly true, but as they come from influential persons or are printed in reputable journals, an impression prejudicial to the success of the exhibition is created which needs to be dispelled. Notwithstanding our high duties it can be shown that the United States is of all countries in the world the most suitable, even in its present condition, for an international exhibition of the most comprehensive character.

In the first place, our tariff duties do not wholly prevent importations. The Government reports just issued show that in the fiscal year ended June 30 we imported foreign goods to the value of \$745,127,476. A large part of these huge imports necessarily consisted of crude materials or commodities upon which but little labor had been expended, but at the same time the quantity of manufactured goods included was very considerable. Of iron and steel alone, excluding iron ore, the imports amounted to no less than \$42,377,842, which is certainly a sum not to be sneezed at or treated lightly. In other lines of manufactures the results of our foreign trade are shown to be equally favorable to foreign manufacturers and producers. We import large quantities of the finer fabrics in cottons, woolens and silks, and the representatives of foreign houses in these lines regard their trade here as an important part of their aggregate business. They quite naturally do not feel friendly toward our tariff duties, and would assist any movement intended to break them down and enthusiastically circulate any arguments favoring such an end, but at the same time they are hardly disposed to abandon the American field simply because they are obliged to pay duties on the goods which they import. Yet they would be guilty of no greater absurdity should they do so than our own citizens are committing when they discredit on this ground the efforts put forth to establish an international exhibition in New York.

In the next place, our tariff duties are most emphatically not a serious bar to the

importation of high-class goods, fabrics and wares such as would be shown at an international exhibition. Coarse goods have little place and are accorded scant treatment in a world's fair, except when they form part of a comprehensive national exhibit or are intended to illustrate the resources of a State or to practically demonstrate the results of a process. The most artistic wares, the finest machinery, the best products of skill and art in every line, are sent to such an exhibition, and of these the people of the United States are confessedly the heaviest purchasers. If it be said that we cannot purchase foreign machinery because of the tariff, it is sufficient to point to the imports of \$2,445,379 worth of machinery in the past fiscal year in refutation of the allegation. Fine cutlery finds a good market here or our imports in that line would not have amounted to \$2,362,537 in the same period. These foreign goods may have cost the purchasers more than if no duties had been imposed, but that is their concern if they are disposed to pay the prices charged. The goods were within their reach and the duties levied were not prohibitory. These illustrations might be carried on indefinitely, as the instances are numerous.

Again, it has been repeatedly shown that exhibitors at international fairs have not always expected to profit by sales of their products so much as by sales of patents covering new processes or of privileges to manufacture articles of novel design, which are thus advertised to the world very thoroughly and effectively. A process illustrated practically at an exhibition covering months, or a machine in operation under favorable conditions, as all machines usually are at such places, will give an inventor or a patent-owner opportunities which he cannot afford to ignore. This has been the case at every world's fair hitherto held, and it would be none the less so at New York.

It is most absurd, however, with the brilliant success attending the Paris Exposition this very summer, to bewail the imaginary barrier which exists in our tariff duties as affecting the probable success of the New York exposition. France has the most stringent system of imposts devised by any country. Infractions of customs laws are not so lightly regarded there as here, but are very severely punished. Fines and imprisonment await the luckless individual who even attempts to import into France a new article of manufacture not specifically covered in the code, as more than one American can testify by experience. The French Government so carefully fosters French enterprise that foreign manufacturers are frequently excluded from competition with native manufacturers in lines in which the latter are notoriously far inferior. Yet the success of the French Universal Exposition surpasses all previous affairs of the kind. With such an example before us can it be claimed with any show of reason that our imposts are a barrier at all worthy of consideration? With a market in this country of 70,000,000 of people, comprising the most aggressive and enterprising agglomeration of humanity on the face of the globe, whose intelligence is far above the average, whose purchasing power exceeds anything before known in the world's history, and with whom frugality is not an en-

forced condition, the United States offers to the world the grandest location for an international exposition in 1892, and it rests with our own citizens as to whether it shall not be a greater event than any similar enterprise hitherto attempted.

## The Lowering of the Interest Rate.

The rapid accumulation of wealth in this country is having far-reaching influences and lies at the bottom of much of the dissatisfaction which business men express when the question of profits comes up. Beginning with the safest securities, like Government bonds and some municipal obligations, interest has been scaled down until the very best do not net much more than 2½ per cent. The same has been going on in railroad securities. "Poor's Manual" tersely puts the matter in the following shape: "But the days of large profits appear to have passed. A railroad which in the future can pay regular dividends of 5 per cent. per annum will be regarded in much the same light as those which formerly paid 8 and 10 per cent. for years without intermission." These facts are thoroughly appreciated generally, but their consequences in other directions do not appear to be well understood. Putting it bluntly, the lowering of the interest rate, permanent as it seems to be, involves a sharp lowering of profits to manufacturers and merchants. If in any branch the returns are now as great as ten years ago would have been thought reasonable, or even if that impression gets abroad, there is a rush into the business which drags profits down, sometimes considerably below the normal level. Probably every business man can recall instances within his observation, if, indeed, he has not had them come within his own experience.

In the manufacture and in the handling of staple articles the tendency has been irresistibly toward lower profits, and there are some considerations worthy of attention which make that tendency more pronounced. It is a fact quite generally recognized that investors have lost some confidence in railroad management, and that there has been some pressure, notably in England, to place funds in the industrial enterprises. The purchase of American establishments is an incident in this movement. The flow of money into Southern enterprises is similarly significant. Thus far these investments have been limited to the acquisition of concerns showing a brilliant record in the past, or holding out exceptional prospects for the immediate future. But before it ceases there are likely to be some very wild transactions from the stand-point of the purchasers.

Moneyed men smarting under recent losses may be content to pay dearly for safety of principal in the form of sharply-diminished revenue. It is not in human nature to continue such sacrifices very long. In order to average up the interest rate a fraction of the capital will be put into some enterprise which holds out the promise of larger returns. That is done conservatively and tentatively at first, but emboldened by success greater risks will be taken. We believe that the signs of the times point to a reaction in the form of a speculative era in which profits will be larger, accompanied by the waste capital which is usually coupled with periods of over-sanguine investment.

### The Lower Drift of Prices.

While there is a general disposition to regard the prices of many leading commodities as abnormally low, it is important to observe that the diminished cost of production and of transportation now, as compared with former years, inevitably tends to establish the range of prices permanently on a lower basis. This is pre-eminently true of crude oil since the introduction of pipe-lines for its conveyance to the sea-board. The introduction of tank steamships operates in like manner to affect the prices of oil in foreign markets. So of grain. The actual cost of transferring cereals from the Northwest to the Atlantic ports has tended lower year by year, as shown by the careful comparison of statistics collected for various periods. The cost of beef cattle, hogs and other products of agriculture all come under the same rule and are in like manner affected. Coal, iron and coke cost the consumers less from the operation of natural causes, not merely from increasing competition in production and transportation, but from constant improvements in processes and facilities and the enlargement of sources of supply. Notably in this last respect reference might be made to the new developments in Alabama and to the opening of new railroad and water routes between points of shipment. The use of improved machinery is a factor long recognized as an element affecting cost, and the limit of depression can have no definite bounds so long as the inventive faculty continues to be exercised. The consumer may confidently congratulate himself that the drift of events is steadily and permanently in his favor, but with larger temporary demands for the product must come various fluctuations, often transient in their character.

A correspondent who is a member of the New York Metal Exchange suggests that a wise business policy would dictate the liquidation of that concern. He figures out that it costs nearly \$12,000 annually to keep that institution going, when a single firm would do more business than the whole of the transactions reported as consummated on the floor of the exchange. It seems to us that so far as the members of that body are concerned it is simply a question with them whether the services rendered by it are worth the dues they pay, say about \$30 per annum, and, if not, whether the chances of using it as a medium for doing business in the future are worth that part of that sum for which they are not now getting an equivalent. If the attendance is a fair measure of the interest taken in the work of the Exchange, the indifference of its members is great, nor do its prospects as reflected by quotations of the seats appear encouraging. We observe that much emphasis is placed by some of its advocates upon the possibilities which may grow out of the introduction of pig-iron warrants as a medium for speculation. We believe that such hopes have little foundation. If success does attend the efforts of those who are identified with this movement, they will seek a larger arena than that offered by the floor of the Metal Exchange. So far as the metal trade is generally concerned, it would see the dissolution of the

exchange without a pang of regret. Considering its pretensions it has not been a factor of much importance for some time past.

### Gold and Silver Coinage in 1887 and 1888.

The Treasury Departments of both England and the United States have for a couple of years past made great efforts to gather as reliable and complete data as possible relating to the coinage of the precious metals. These efforts prove the importance which attaches to such statistics, especially in view of the future of silver. The mints still absorb the greater portion of current gold and silver production, and consequently exercise a decisive influence on their relative value. From the extent and nature of a country's mint operations we are best enabled to form a judgment as to the tendency of the coinage policy it pursues, for the ease or difficulty in making monetary reforms in the future greatly depend on the coinage which preceded them. With reference to silver, for example, the prevailing policy of leading nations appears to be an expectant one.

#### Gold Coinage.

	1887.	1888.
England.....	\$9,544,000	\$10,165,000
Australia.....	24,784,000	25,084,000
United States.....	25,171,000	32,950,000
France, Italy, Belgium and Switzerland.....	4,993,000	643,000
Germany.....	29,554,000	36,072,000
Holland.....	172,000	151,000
Denmark, Norway and Sweden.....	422,000	.....
Russia.....	21,822,000	22,183,000
Austria-Hungary....	2,769,000	2,850,000
Portugal.....	283,000	108,000
Japan.....	1,308,000	1,019,000
Totals.....	\$120,722,000	\$131,225,000

The coinage in 1887 represents 173,100 kg. of gold, and that of 1888 190,000, while actual gold production in 1888 did not exceed 150,000 kg., so that the coinage notably exceeded current production last year. If we take, furthermore, into consideration that usually about 50 per cent. of a year's gold production is converted into jewelry and used for industrial purposes, the exceptionally large coinage in 1888 appears altogether out of proportion to production. The presumption, therefore, arises that either the latter has been larger than the gold-producing countries officially reported or that a notable portion of the new coinage was drawn from the stock of gold bars or was a mere recoinage or both. The impression among men versed in matters relating thereto is that more gold has been produced than the returns show, but even assuming this to have been the case to the extent of several thousand kilograms, it nevertheless remains an indisputable fact that year after year there is a considerable melting down of jewelry and gold coin and recoinage, and that the amount derived therefrom for new coinage is not unlikely as abundant a source of supply as the new current product of the mines. In the United States it has been shown that in 1885 \$11,152,120 were used for jewelry and industrial purposes, and that to obtain this amount \$847,715 of old jewelry was melted down and \$2,827,378 gold coin, but these are only partial statements, and the belief is still entertained that year after year one-third to one-half

of the gold produced finds its employment in jewelry and other industries.

The silver coinage of the world was as follows:

	Silver Coinage	
	1887.	1888.
England.....	\$4,906,000	\$5,143,000
British India.....	22,159,000	51,784,000
United States.....	36,951,000	36,783,000
France, Italy, Belgium and Switzerland.....	7,236,000	1,167,000
Cochin China.....	3,275,000	1,105,000
Germany.....	750,000	1,039,000
Egypt.....	10,875,000	45,000
Holland.....	81,000	.....
Denmark, Norway and Sweden.....	143,000	139,000
Russia.....	1,631,000	1,217,000
Austria-Hungary....	4,752,000	5,722,000
Spain.....	11,950,000	10,777,000
Portugal.....	1,085,000	1,263,000
Japan.....	10,467,000	11,143,000
Totals.....	\$116,261,000	\$127,327,000

The weight of the silver employed was 2,520,000 kg. in 1887 and 2,767,000 in 1888; reduced to gold value, the amount was \$79,920,000 in 1887 and \$84,480,000 in 1888. The amount coined in 1888 comes up pretty closely to the actual production, there having been little recoinage, except in Spain and Italy. A fair estimate of actual production places the average for 1887 and 1888 at 3,000,000 kg. Out of these averages the United States, British India, Cochin China and Japan absorbed for coinage 2,000,000 kg. A part of the remaining 1,000,000 kg. was shipped to the far East and Africa, and a part was consumed for industrial purposes or remained in the hands of miners and dealers. Europe has used very little new silver for coinage, and it is admitted pretty much on all hands that the continued coinage in the United States is about the only thing preventing silver from declining below 42d per ounce in the London market. Any serious modification in this respect or the repeal outright of the Bland bill threatens the world with a catastrophe in silver. Hence it is believed that the coinage per annum of \$25,000,000 more gold or as much less would exercise no influence whatever on the monetary question as it stands, whereas any notable decrease of silver coinage would affect the value of the white metal at once. Still, at present there is little prospect that silver production will materially diminish or that the extreme East will in a permanent manner absorb greater amounts than of late, or that industry will use it more freely. Leaving out of the question renewed attempts at reconstituting bi-metallism internationally, there are consequently some lingering wishes or even hopes that some means may be devised to create a freer monetary use of silver, and thus impart to it a certain degree of practical stability.

The returns of savings-banks to the State Superintendent of Banking for the first half of this year would indicate that business is prosperous. When business is good people can and do save money. When times are hard the savings are drawn upon, and the amounts withdrawn exceed the sums deposited. During the first six months of this year the aggregate deposits of all the savings banks of the State exceeded the aggregate amounts withdrawn by \$3,750,000. The statement shows a healthy condition of the system. In the past ten years the average gain for the first six months in the aggregate resources was about \$28,000,000. The first six months this year is a little more than the average.



### The Minnesota Car Company's Works.

The Minnesota Car Company was organized in the city of Duluth, Minn., on August 29, 1888, with the following officers: John F. T. Anderson, president; George H. White, superintendent; William E. Tanner, general manager; directors: J. F. T. Anderson, William E. Tanner, Joseph R. Anderson, Francis T. Glasgow and M. B. Harrison. Ground was broken for the first building in October, 1888, since which time the work has been pushed with unusual vigor, building being carried on during the whole of the past winter, until at the present time the entire works are about assuming completion. The works will be started with the departments as described below:

First comes the paint-shop. This is a frame building with an iron roof, 58 feet wide by 362 feet long, having a capacity of 25 cars and is connected on the north end with the main erecting-shop by an iron transfer-table, which is also under cover. The shop is well adapted to the purpose required, being well ventilated, and heated by an improved system of steam from the boilers.

The erecting-shop and mill is situated next to the paint-shop and running parallel with it. The main erecting-shop, planing-mill and machine-shop were all placed under one roof, making it entirely practicable to work these departments, so dependent one upon the other, to their full capacity, without regard to weather or causes that so often retard work which should be expeditious. This building is frame with iron roof, and is 97 feet wide by 527 feet long, and connected on the north end by transfer-table with the paint-shop. One-half the total length of the building will be used as an erecting and truck shop, and has a capacity of 20 cars. The other half, with the exception of the south end, is devoted to framing and planing-mill machinery of the latest and most improved design, consisting of saw and planing mills, vertical and horizontal boring-mills, mortising and tenoning machines, universal wood-workers and all other classes of machinery known to car-builders as accurate and labor-saving devices.

One of the nicest features of this shop is the arrangement of piping used for carrying off the sawdust and shavings from the different machines. This piping is so nicely constructed that with the mill running to its full capacity there will be little or no accumulation of either shavings or sawdust left on the floor. This end is accomplished by an ingenious arrangement of powerful fans, which suck up the refuse and deposit it directly into the furnaces of the boilers, or to a fire-proof bin provided for that purpose, the current being changed at will by the engine man, who has a system of valves conveniently arranged for that purpose. Another notable feature of this entire building is the arrangement of the line-shafting, which is so constructed with a system of clutches that should a belt break or other mishap occur, that section could be immediately stopped independent of all others, thereby saving much time and inconvenience to the rest of the shop. The machines are all so arranged on the floor that the work upon leaving them will be in its proper position for application to the cars under construction. The power for the machines is derived from a Buckeye automatic high-speed engine of 390 indicated horsepower, the main driving-shaft having a minimum speed of 230 revolutions per minute. Just north of the main erecting-shop is the lumber-yard, followed in turn by a dry kiln of improved pattern and large capacity, it being the intention to thoroughly dry all lumber that goes into the construction of the cars.

The southern end of the same building is fitted up as the machine-shop, and in it will be done all work on iron not done at the forge—such as turning axles, boring wheels, cutting bolts, tapping nuts, &c.; also the making and keeping in repair of all bits and cutters for the numerous mill-machines. The power for this department is independent of the rest of the shop, and is furnished by a Buckeye automatic engine, 65 horse-power, supplied from an independent battery of boilers. The entire building is well lighted and ventilated, and heated by steam. On the south side of the erecting-shop and parallel with it are the foundries and pattern-making department, with all necessary buildings and attachments to make them models of their kind. The main building is brick, with corrugated iron roof, and is 61 feet wide by 385 feet long. The northern end is partitioned off for the pattern-room, and is provided with saws, lathes, planers and boring-tools. The arrangement of piping is the same as in the planing-mill for carrying off the shavings. This department is conveniently arranged, well lighted and heated by steam.

Leaving the pattern-room, we find the soft foundry, with its well-arranged cupola, core-ovens and cleaning-room. It is also supplied with two molding-machines of the latest pattern. The wheel-foundry occupies the entire southern half of the building, and has a capacity of 100 wheels per day. The cupola and arrangement for handling the molten metal are of the latest design and most approved pattern of the Detroit Foundry and Equipment Company. There is also an independent core-room to this department. On the west side of this building and adjoining it is the brass foundry, which has all the requirements necessary for a first-class foundry and is conveniently situated.

East of and parallel with the foundry is the smith shop, steam-forge and rolling-mill. This shop more than any other is a departure from similar departments in connection with car-works. The building is frame, covered with corrugated iron, and is 30 feet wide by 300 feet long. The north end of the building is the forge, which is equipped with two 3000 and one 6000 pound steam-hammers, having a capacity of 60 axles per day. The heating is done in gas furnaces, the gas for which is furnished by an independent plant. The shop is complete with forges, cranes of large capacity and all other similar requirements. In the center of the building is situated the two large rolling-mills, containing one 10 and one 18 inch train, the power being furnished by two Corliss engines, one of 250 and the other 500 horse-power.

It is the intention of the company to roll all the iron used by them, also to furnish iron in any quantities to the outside market. The mill is complete with gas furnaces—in which is done all the heating—cranes, hot saws and shears. The smith shop occupies the southern end of the building, and is well equipped with bolt-machines, formers and steam-hammers. This part of the plant is so arranged that the iron in coming from the mill will be cut to length and formed to its final shape while still hot. In that manner much expensive reheating will be avoided. In this shop there are also four steam-hammers, under which will be done all classes of welding and other work usually requiring a large number of men. All furnaces in the forge and rolling-mill are supplied with gas made by a battery of Smith's regenerative furnaces and producers.

South of the rolling-mill will be the scrap-yard for wrought-iron of all kinds, made complete by a large shed and bins for all classes of scrap. This department is furnished with an independent shear of large capacity, capable of cutting iron as

large as 5 inches diameter. In these sheds will be piled all the iron for the steam-hammers and rolling-mills. Northeast of the forge building is the boiler-house and gas-producers. In this building there is a battery of six boilers of over 100 horsepower each, furnishing steam for the two Corliss engines in the rolling-mill and for the steam-hammer in the forge. These boilers are also supplied with fuel by the piping system from the planing-mill. Attached to the boiler-house are the gas-producers, five in number, and of such capacity as to supply gas economically to all furnaces. The arrangement of coal-bins at this point is worthy of especial mention. The boiler-house at this point is far enough below the surface of the yard to allow the bottom of the bin to come level with the floor, but at the same time to allow sufficient head-room to admit of box or dump cars being used. The building will all be lighted by electricity, furnished by 30 arc lights and one 250-light incandescent dynamo.

The office is a two-story building, finished in hard wood, equipped with fire and burglar proof alarms, heated by steam and lighted by electricity.

The capacity of the works as completed will be about 15 standard box-cars per day. Flats or gondolas can be built at the rate of about 18 per day. It is the company's intention to make additions and improvements as rapidly as their business will justify.

The Western business of the New York Iron Car Company, Duluth papers announce, is to be united with that of the Minnesota Car Company, and it is further stated that the capacity of the works at West Duluth is to be doubled. These will be built on a site adjoining the works, a building for malleable-iron works 300 feet in length and about 60 feet wide, in and about which will be employed fully 300 men. There will also be added a sawmill, and additional works will bring the total number of employees of the new concern, when running full, to 1500. The company have in mind the manufacture of locomotives and other railway supplies, increasing the list of employees to 2000 or over.

The Dakotas are believed to possess the most remarkable artesian belt in the world. There are at least 50 deep wells in the two Dakotas, most of them in the South State. Their depth will range from 450 to 900 feet. The pressure is the most notable fact yet developed. The lowest known is 125, and it runs up to 200 feet. The streams are from 4½ to 6 inches in volume. Such a power and volume is unknown elsewhere. The height of these ranges from 100 to 200 feet. The majority of these wells are so far found in a belt of country at least 50 miles east and west and 400 north and south. But there are good artesian wells all along the line of the Northern Pacific Railroad as far west as Helena, where there is one at the altitude of 4400 feet, which, from the depth of 900 feet, supplies 60,000 gallons of water every 24 hours. In the Red River Valley, the northeast section of Northern Dakota, there is another remarkable belt of subterranean water, which flows to the surface when tapped at depths of from 50 to 200 feet. Further south, in the section known as the Coteaux of the Missouri, there is a series of shallow lakes or lagoons, which it is believed from their altitudes may be readily transformed into large and small storage basins.

Eben S. Allen, ex-president of the Forty-second Street and Grand Street Railroad Company pleaded guilty to the fraudulent issue of stock of the company, and was sentenced by Judge Gildersleeve to 14 years' imprisonment in State Prison.

# TRADE REPORT.

## Chicago.

Office of *The Iron Age*, 59 Dearborn street,  
CHICAGO, August 19, 1889.

**Pig-Iron.**—The constant demand for small lots of Iron from consumers doing a general foundry business is a prominent feature of the market. The character of their business is such that they must have the Iron they buy shipped at once. Under the stress of this class of trade the market is quite firm, and some sales made at an advance on what have been the regular prices for Charcoal and Coke Iron. There has been little or no contracting for long-time deliveries lately. Furnace men are not disposed to force an advance on any of the brands, but when buyers must and will have Iron that they do not wish to sell they plead that they are justified in anticipating the price they expect to get later in the season. Bessemer Pig has been advanced here, but only on account of the advance in Pittsburgh, as there are no consumers here outside of the Illinois Steel Company, and they will not pay the prices asked, and intend making Bessemer at the Mayville Furnace. There is a good demand for small lots of Ohio Soft Irons, but the prices named are so unsatisfactory to buyers that sales are confined to the "can't-help-themselves" class of consumers. Southern Foundry Irons are practically out of the market at prices asked. There is some inquiry for Mottled and Gray Forge at 50¢ @ 75¢ per ton below quotations. Quotations are as follows, cash, f.o.b. Chicago: Bessemer, \$17.25 @ \$17.50; Lake Superior Charcoal, \$18.50 @ \$19; Local Coke, No. 1, \$16; No. 2, \$15; No. 3, \$14; Chicago and Bay View Scotch, No. 1, \$16; American Scotch (Blackband), \$18 @ \$18.50; Southern Foundry, No. 1, \$16.50; No. 2, \$15.50; No. 3, \$14.50; No. 1, Soft, \$15.50 @ \$15.75; No. 2, \$14.50; Gray Forge, \$14.50; Mottled, \$14; Tennessee Charcoal, No. 1, \$17.75; Alabama Car-Wheel, \$24 and \$25; Hanging Rock, No. 1, \$18 @ \$18.50; Jackson County, No. 1, \$17.75 @ \$18.

**Bar-Iron.**—There is a very good demand for Bars, and it is safe to say that mills have established an advance of \$2 per ton on the poorest and best grades of Iron. Late advances on crude material have settled the fact with consumers of Bars that they must pay higher prices. Some manufacturers who booked orders three weeks ago at 1.55¢ and less are now quoting 1.65¢. They are full. It is pretty generally conceded that makers of Common Iron are getting 1.60¢ for the general run of orders, and 1.70¢ for Single Refined at mill. Jobbers have advanced their prices from store, and are now quoting 1.75¢ for Common, 1.85¢ for Single Refined and 1.90¢ @ 2¢ for Best Refined. Stocks in the hands of jobbers are considerably reduced, and they are unable to replenish at the prices they expected to pay.

**Structural Iron.**—There is no change from the week previous in this line of material. The greatest difficulty lies in the inability of makers to meet the demand. No new contracts for large quantities have been placed. Quotations are as follows, f.o.b. Chicago: Angles, 2.25¢ @ 2.35¢; Universal Plates, 2.30¢ @ 2.40¢; Sheared Plates, 2.35¢ @ 2.40¢; Tees, 2.55¢; Beams and Channels, 2.90¢. From stock on hand: Angles, 2.40¢; Tees, 2.65¢ @ 2.70¢; Beams and Channels, 3.40¢.

**Plates, Tubes, &c.**—The market is quite active and firm and mills very reluctantly taking orders of any kind. Prompt shipments are more readily obtained from store

stock, and a great many mill buyers have to pay the jobbing price for Plates that are wanted immediately. Makers quote Nos. 10 to 14 Iron Sheets, at 2.30¢; Steel, at 2.40¢, and Tank, Steel and Iron, 2.25¢, at mill. From store orders can be filled at the following prices: Iron Sheets, Nos. 10 to 14, 2.60¢ @ 2.70¢; Steel, Nos. 10 to 14, 2.75¢ @ 2.80¢; Tank, Steel and Iron, 2.50¢ @ 2.60¢; Steel Plates, Shell, 3¢; Flange, 3.50¢; Fire-Box, 4.25¢; Otis, 5.50¢; Ulster Iron, 3.75¢; Boiler-Rivets, 4¢ @ 4.25¢; Boiler-Tubes, 52½ % discount on 1½-inch and less and 57½ % discount on 2-inch and larger. The demand for Tubes has been very good and prices said to be well maintained.

**Sheet-Iron.**—Light-Sheet stocks are broken and low. Dealers who have unfilled contracts with makers are clamoring for deliveries in advance of specified time in many cases, and those who have no material under contract cannot get it at the time and in the quantity they want. Mills making a cheap grade of Iron and retailing it through the West have been underselling the better grades, causing the cancellation of orders previously placed with jobbers for delivery during August and September. Where jobbers wish to retain an order they meet the price, but frequently they prefer to keep the Iron, as they can now get better prices for all they have. Small lots from store are quoted as follows: No. 24, \$3.10; Nos. 25 and 26, \$3.20; No. 27, \$3.30. Manufacturers who can take small orders for prompt delivery are quoting on a basis of \$3 for No. 27 at the mill.

**Galvanized-Iron.**—Competition between makers of low-grade Irons keeps prices near the lowest point. The demand is good from cornice-makers, furnace-makers, can and tank makers and nearly every line of consumption, and yet there is no marked improvement in the selling prices. Manufacturers making this class of Iron are quoting 70 % off on any kind of a desirable order. Standard brands are unchanged at 65 % off on Juniata, 65 % and 5 % off on Charcoal from store.

**Merchant Steel.**—There has been a steady trade in small lots for all kinds of Steel. The late advance for the raw material has caused some consumers to anticipate their wants and may hurry in the delinquent buyers who a week ago were awaiting developments. The indications are that a higher range of prices will be made soon on the whole line of finished material. Manufacturers are still quoting as follows, f.o.b. Chicago: Soft Steel Bars, 1.90¢ @ 2¢; Spring Steel, 2.25¢; Tire Steel, 2.25¢; Toe Calk, 2.30¢; Open-Hearth Machinery, 2.75¢. From store jobbers quote: Mild Machinery, 2.10¢ @ 2.20¢; Tool, 7.75¢ @ 8.50¢; Bessemer Machinery, 2.40¢ @ 2.60¢; Open-Hearth Machinery, 3¢; Sheet, 7¢ @ 10¢; Tire, 2.30¢.

**Steel Rails.**—The market continues fairly active for small lots of heavy sections, to be delivered this fall. Large buyers apparently have been supplied for this season. Makers are quoting \$29 @ \$30 for standard weights, \$33 @ \$34 for 30-lb and \$38 @ \$40 for 12-lb and 20-lb. The demand for light Iron Rails continues to be fairly active. For immediate delivery it has become difficult to place orders, and mills are getting from \$36 to \$37, according to weight.

**Track Supplies.**—Manufacturers are now having the most active trade of the season. Prices are firm, and another advance would not be unexpected. Makers quote as follows, f.o.b. Chicago: Steel Splice-Bars, 1.90¢ @ 1.95¢; Iron Splice-Bars, 1.80¢ @ 1.85¢; Spikes, 1.95¢ @ 2¢; Bolts, Square Nuts, 2.50¢ @ 2.55¢; Hexagon, 2.60¢ @ 2.70¢.

**Old Rails and Wheels.**—A small advance is made every week on Old Rails. The early part of last week 500 tons were sold at \$22.75, and later in the week \$23 was offered for 500 tons, which was refused. Buyers are endeavoring to get Rails at \$22.50, but we hear of none that can be had at less than \$23. There is a slight improvement in the demand for Old Steel Rails. Long pieces are quoted at \$17.75 @ \$18, and short pieces at \$14.50 @ \$15. There has been a good many inquiries for Old Wheels, and several lots sold at \$18.50. Buyers are offering \$18 @ \$18.25, and sellers asking \$19.

**Scrap-Iron.**—There have not been many transactions in Scrap. The demand has been largely for small lots at lower prices than dealers will accept. Quotations are as follows per net ton: No. 1 Forge, \$18 @ \$18.50; No. 1 Mill, \$14.50 @ \$15; No. 2 Mill, \$9 @ \$9.50; Car-Axles, \$23; Horseshoes, \$19; Wrought Turnings, \$11.50; Axle Turnings, \$13; Wrought Pipe, \$14; Locomotive Tires, \$16; Leaf Steel, \$15; Coil Steel, \$14.50; Cast Machinery, \$12; Stove-Plates, \$9; Cast Borings, \$8.50.

**Hardware.**—Jobbers are having an excellent trade for August. Orders for full lines of goods for new retail stores are numerous, and dealers in every section of the West are sorting up and increasing their stocks. The Saturday half-holiday custom was broken last week and the leading jobbing houses are contemplating night work this week. The demand for Cutlery is increasing very rapidly and many orders are being booked for later shipment. Shelf Hardware, Shop Tools, Axes, household articles and heavy goods constitute a large bulk of the immediate business. Prices are steady and no concessions of any consequence are noted.

**Nails.**—There is a decided improvement in the conditions of the market. Manufacturers are now quoting \$1.75 at mill for Cut Steel Nails, though it is possible that this price would be shaded on large orders and desirable specifications. The demand is much better and there is a strong disposition on the part of jobbers to advance prices on Nails shipped from stock. They are now quoting \$1.85 for Cut Nails and \$2.30 for Wire Nails, in carload lots. Small lots are selling at \$1.90 for Cut Nails and \$2.55 for Wire Nails. Makers of Wire Nails are asking \$2.25, f.o.b. Chicago, and closely observing the movements of Cut-Nail makers. When the new gauge of Cut Nails is established an adjustment of the difference in price will be necessary, and the question of the one going up or the other going down is exciting interest on the part of makers and dealers. It is rumored that some of the Cut-Nail Makers at Wheeling are about to put machines into their plants that will cut either Steel or Wire Nails, and in all probability there will be more makers ready to deliver both kinds of Nails at no distant day.

**Barb-Wire.**—The demand for prompt shipment of Wire is increasing, and many more inquiries for fall delivery are coming in. There is no change in prices, which remain at \$2.75 for Painted and \$3.35 for Galvanized in small lots from store. These figures are shaded on carload orders.

**Pig-Lead.**—Manufacturers report trade quiet, but look for busy times from now until late fall. The demand for spot Lead is exceedingly slack, but the inquiry for futures is excellent. Values range from \$3.75 to \$3.80 for Desilverized.

Messrs. Winne & Jackman is the name of a new firm that will commence business at No. 228 Lake street, Chicago, September 1. They will be the general sales agents for the entire West for the line of Tool and Merchant Steels manufactured



by Howe, Brown & Co., Limited, and the full line of Plow Machinery, Spring, Fire-box, Boiler, Plate and Tank Steels manufactured by the Spang Steel and Iron Company, Limited, of Pittsburgh. These gentlemen are both well known to the trade and need no introduction. Archibald Winne has been identified with the Steel trade in the West for the past 15 years as manager of a branch house and Edwin S. Jackman has been in the business over eight years, a part of this time being spent in and around the manufacturing departments and the balance in the sales department and on the road East and West. The manufacturers whose agents they are are old and established houses. A full assortment of stock will always be found at the Chicago branch, from which small orders will be promptly filled.

## Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., August 20, 1889.

**Pig-Iron.**—The market is more remarkable for its strength than its activity. The demand is fair, but makers are not anxious to sell, so that it is a stand-off on both sides. Pretty much all the Iron that is being made goes promptly into consumption, so that in the meantime there is no particular reason why sellers should be anxious about the future. And, besides this, there is a strong probability—if not an absolute certainty—that cost of production is going to be higher, and as prices in other markets are gradually working up, why should they not do so here? Buyers are a trifle stubborn in regard to paying an advance. They argue that the output is enormous, and that Iron can be had at the prices they are willing to pay, but it is noticed that it is not the Iron they have been accustomed to, neither is it an Iron they care to experiment with. Meanwhile, however, they are holding off from making new contracts, but are gradually coming to a point where they must do so, and it is at this point that the real contest will begin. One or other must give way, but which it will be is no easy matter to foretell. Judging by appearances, there would be no hesitation in saying it will be the buyer; but appearances are sometimes deceptive, so that we try to define the position without venturing on predictions. It is understood that furnaces are sold close up, and as buyers are urgently calling for deliveries, it is supposed that there is very little stock in second hands. As regards the balance of the year, indications all point to an unusually heavy consumption, hence there is no probability of furnaces having any greater surplus of Iron than they have had during the past couple of months. If this theory is correct, and cost of production is increased, as seems inevitable, it is hardly likely that sellers will part with their Iron unless prices are adjusted in proportion. On these assumptions, correct or not, makers are very conservative in entering into new engagements. They believe that there will be no difficulty in selling all the Iron they can spare at to-day's prices, while there is a chance that they may be able to do a great deal better. Neither side is inclined to speculate on the future, so that whatever changes may be forthcoming will be based on legitimate grounds. Quotations to-day are: \$17.50 @ \$18 for No. 1 Foundry, delivered; \$16.50 @ \$17 for No. 2, and \$15.25 @ \$15.50 for Gray Forge. Southern and other outside Irons can be had in a limited way at from \$16.50 to \$17 for No. 1, and \$14.75 to \$15 for Gray Forge, delivered in consumers' yards, but quotations are made with a good deal of caution, especially on large lots.

**Blooms.**—Sellers ask an advance of about \$1 per ton on Steel, but exact quotations are hard to give, as so much de-

pends on what the buyer requires. In a general way the following figures fairly represent the market, but some leading mills are not offering anything at current quotations. Moderate-sized orders, however, could probably be placed at about the following quotations, say \$29 @ \$29.50, delivered, for Nail Slabs; \$30 @ \$31 for Tank Slabs; \$32.50 @ \$33.50 for Shell Slabs; \$36 @ \$37 for Flange, and \$38 @ \$40 for Fire-Box; Charcoal Blooms, \$52 @ \$54; Run-out Anthracite, \$41.50 @ \$42.50; Scrap Blooms, \$32 @ \$33 per "Bloom" ton of 2464 lb.

**Muck-Bars.**—Prices are unsettled, but on the whole are probably 50¢ higher than they were a week ago. Sales have been made at all sorts of prices, varying from \$28.75 to \$30 delivered, or \$28.25 to \$29, at mill. It is hard to say what the price is to-day; some say \$29 @ \$29.50, but there are so few offering that holders can almost name their own figures.

**Bar Iron.**—There is no quotable change in prices, due in some measure perhaps to the fact that very few mills can accept orders. Such lots as are taken command 1.85¢ @ 1.90¢, although one or two mills still quote 1.80¢, but it is doubtful if they have anything to offer. The demand is heavy, and there is a fair probability that higher prices will rule during the coming month. Orders for Sheared Skelp are offered freely at from 2¢ to 2.05¢ at mill, but they are all too full to accept new business, and in any case would require 2.10¢ @ 2.15¢ to secure their attention. Grooved Skelp is held at 1.85¢ @ 1.90¢, delivered, but the demand runs more on Sheared Skelp for the present.

**Plates.**—The demand keeps up remarkably well, and buyers have considerable difficulty in placing orders for early delivery. All the mills seem to be full of work, and the disposition is to ask more money on new business. Prices vary according to the amount of work on hand, but the following may be regarded as fair average quotations, say: 2.15¢ @ 2.2¢, delivered, for Ordinary Plates and Tank Plates; 2.20¢ @ 2.25¢ for Universal Plates; Shell, 2.4¢ @ 2.5¢; Flange, 3.25¢; Fire-Box, 3.7¢ @ 4¢; Steel Plates, Tank and Ship Plate, 2.2¢ @ 2.30¢; Shell, 2.5¢ @ 2.7¢; Flange, 2½¢ @ 3¢; Fire-Box, 3½¢ @ 4¢.

**Structural Material.**—There is little that can be said except that mills are full of work and prices very firm. There is an abundance of business in sight, and there is likely to be unusual activity during the fall and winter months. Prices are firm, with an upward tendency, but for the present we quote as follows: Bridge Plate, 2.15¢ @ 2.20¢; Angles, 2.10¢ @ 2.20¢; Tees, 2.6¢ @ 2.7¢; Beams and Channels, 2.8¢ for Iron or Steel, all delivered at Philadelphia or its equivalent.

**Sheet-Iron.**—There is a good demand for everything, and manufacturers find some difficulty in meeting all the calls promptly. Mills are running to their fullest capacity, but have not been able to keep up their usual assortment of stock. Prices firm at about the following figures for carload lots:

Best Refined, Nos. 14 to 20.....	3¢
Best Refined, Nos. 21 to 24.....	3.20¢
Best Refined, Nos. 25 to 26.....	3.40¢
Best Refined, No. 27.....	3.50¢
Best Refined No. 28.....	3.60¢
Common, ¼¢ less than the above.	
Best Soft Steel, Nos. 14 to 20.....	3¼¢
Best Soft Steel, Nos. 21 to 24.....	3½¢
Best Soft Steel, Nos. 25 to 26.....	3¾¢
Best Soft Steel, No. 27.....	4¢
Best Bloom Sheets, ¼¢ extra over the above prices.	
Best Bloom, Galvanized, discount.....	.65 %
Common, discount.....	.67½ %

**Steel Rails.**—There is no great amount of business to report, although the mills are crowded with work, largely, however, on Steel for other purposes than Rails.

The Rail departments are full for September, some full to the end of the year, so that there is no urgency to secure orders. Prices are firm at \$28 for winter work and about \$28.50 for such orders as can be squeezed in between times, and these for the present comprise the bulk of the business.

**Old Rails.**—Quotations are merely guesswork, as there are practically no Rails for sale. It is said that \$25 would be paid for lots delivered at mills, but \$25 @ \$25.50 is asked at sea-board for lots from abroad.

**Scrap-Iron.**—Is also very scarce, although there is enough to supply the limited demand at about the following prices: \$21 @ \$21.50 for cargo lots; \$21 @ \$21.50 for carload lots, delivered, or for choice, \$22; No. 2 do., \$15 @ \$16; Turnings, \$14 @ \$15; Old Steel Rails, \$16.50 @ \$17.50; Cast Scrap, \$15 @ \$16; do. Borings, \$9 @ \$10; Old Fish-Plates, \$23 @ \$24; Old Car-Wheels, nominal, \$17 @ \$18, Philadelphia.

**Wrought-Iron Pipe.**—The demand continues to be entirely satisfactory and prices are very firm. The outlook is said to be excellent for the fall trade, with discounts as follows: Butt-Welded Black, 50 %; Lap-Welded Black, 62½ %; Butt-Welded Galvanized, 42½ %; Lap-Welded Galvanized, 50 %; Boiler-Tubes, 52½ % @ 57½ %, according to size.

**Nails.**—The only exception in the way of improvement may be found under this heading. There is no decline, but there is an absence of tone that is very disappointing. However, the talk is for better prices, and in view of the advancing tendency in the general market, Nails must follow, although at present \$2 from store and \$1.85 @ \$1.90 for carload lots appear to be about fair average quotations.

## Pittsburgh.

Office of *The Iron Age*, 77 Fourth Ave., PITTSBURGH, August 20, 1889.

While possibly there is not quite as much excitement in the general Iron and Steel business as there was a week ago, the activity then noted continues, and prices are still tending upward. Mills and furnaces are all well employed, and many have contracts booked that will absorb their product for from one to three months, some until the close of the year. The activity noted is caused by actual demand, and business is confined to the purchaser on the one hand and the consumer on the other, with the brokers between them. Some of the brokers have been doing a very large business, one firm reporting sales of about 10,000 tons during the past week.

Railway freights will be very generally advanced September 1. There is considerable complaint in regard thereto by our manufacturers, who say that just as soon as business begins to brighten the railroads commence to put up rates, and in their hurry to advance rates they help to drive trade away.

**Pig-Iron.**—The activity noted for some weeks past continues, and the general position of the market is still in favor of the furnace men, who, as might be expected, have no compunction about making the best of it. Brokers report that but for the extreme views of furnace men the volume of business would have been considerably increased over what it was. Prices have still further advanced, and furnace men are inclined to the belief that they will go still higher. As compared with the lowest point, Forge Irons have advanced \$1.25 @ \$1.50 per ton and Bessemer \$1.50 @ \$2; the sales of Bessemer have been very large during the past few weeks, ranging in blocks of from 1000 up

to 15,000 tons. We quote prices as follows:

Gray Forge Neutral.....	\$15.00 @	\$15.25, cash
Gray Forge, Cold Short....	14.50 @	14.75, "
All-Ore Mill.....	15.50 @	16.00, "
No. 1 Foundry.....	16.50 @	17.00, "
No. 2 Foundry.....	15.50 @	16.00, "
White and Mottled.....	13.75 @	14.25, "
Charcoal Foundry.....	20.00 @	22.00, "
Cold Blast Charcoal.....	25.00 @	28.00, "
Bessemer Iron.....	17.50 @	17.75, "

Included in the sales of Bessemer were 5000 tons at \$17.15; 2000 do. for August and September at \$17.50, and 5000 do. at \$17.75. Thus far there have been but few sales of Gray Forge reported above \$15, cash, and none above \$15.25. Foundry Irons continue comparatively quiet, but for these there will no doubt be an improved demand later on.

**Muck-Bar.**—Continues strong in sympathy with Pig-Iron, and there has been a further advance in prices. We now quote \$28 as the ruling price, although some sellers are asking \$28.50.

**Spiegel.**—Is quoted at \$31 @ \$31.50 for 20 %, and Ferromanganese at \$61 @ \$62 for 80 %.

**Manufactured Iron.**—There is a continued good demand for all kinds of manufactured Iron, and prices are firm in sympathy with the raw material. The mills are all busy, some of them pretty well sold ahead, and some small owners are refusing to contract for future delivery at present prices. For No. 1 Iron made from No. 1 Muck-Bar prices are quoted as follows: Bars, 1.75¢ @ 1.80¢; Plates, 2.15¢ @ 2.25¢; No. 24 Sheet, 2.75¢ @ 2.80¢, 60 days, 2 % off for cash. Skelp-Iron is quoted at 1.75¢ @ 1.80¢ for Grooved and 2.05¢ @ 2.15¢ for Sheared. Those making a specialty of Skelp are very busy, hence it is not strange that prices are tending upward.

**Nails.**—The Nail trade continues in an unsettled and, to makers, very unsatisfactory condition, notwithstanding there is every indication of higher prices. The demand continues light for the season, but it is expected that there will be an improvement later on. While manufacturers here continue to quote Cut-Nails at \$1 90, 60 days, 2 % off for cash, they would not contract for future delivery at the price quoted. Nail Slabs have gone up from \$1 to \$1.50 ¢ ton, and it is evident that Nails must go higher, as present prices at the increased cost of Slabs do not more than cover cost of production. Wheeling manufacturers and the nailers have as yet failed to come to an understanding, and the situation in that district is anything but encouraging. The Wire-Nail card remains unchanged at \$2.25, 60 days, 2 % off for cash, but it is still maintained that the card is being cut.

**Wrought-Iron Pipe.**—There appears to be no abatement in the demand for Pipe, especially the larger sizes, and the Pipe-mills are all about as busy as they can be. The meeting of the association at Philadelphia last week made no change in prices, notwithstanding it was confidently expected that they would be advanced; however, a good many firms are sold up for all they can make during the next month or two, and therefore it was thought best to make no change for the present. The September meeting of the association will be in Pittsburgh. We quote discounts as before: On Black Butt-Welded Pipe 50 %; on Galvanized do. 42½ %; on Black Lap-Welded, 62½ %; on Galvanized do., 50 %; Boiler-Tubes, 1½-inch and smaller, 52½ %; 2-inch and larger, 57½ %; Casing, 5½-inch, 60 % off.

**Old Rails.**—Old Iron Rails continue in scant supply and the market is firm; sales of two lots of 500 tons each reported at \$24.50 and 1000 tons at \$24.85. Old Steel Rails are quoted at \$18.50 @ \$19 for short and \$20 @ \$21 for long lengths.

**Billets, Blooms, &c.**—There is no abatement apparently in the demand for Bessemer Steel Billets, and with the mills all sold ahead prices are still tending upward; we now quote at \$28.50 @ \$29; it is rumored that sales have been made above our outside quotations. Nail Slabs quoted at \$28 @ \$28.50.

**Steel Rails.**—Heavy sections are quoted at \$28 @ \$28.50, cash, at mill, for winter delivery; both of the mills here are sold up for the next two or three months.

**Railway-Track Supplies.**—Spikes have been advanced to 2.10¢, 30 days, and are likely to go still higher, as is everything in this line, in view of the raw material.

**Old Material.**—There is an increasing demand and prices are still tending upward. No. 1 Wrought Scrap, \$20 @ \$20.50, net ton; Wrought Turnings, \$13 @ \$14; Car-Axles, \$24 @ \$25; Cast Scrap, \$14.50 @ \$15, gross; Cast Borings, \$12 @ \$12.50; Old Car-Wheels, \$18 @ \$18.50.

## Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts., CHATTANOOGA, August 19, 1889.

**Pig-Iron.**—There is no change to note in the condition of the market; prices and demand remain the same. The requirements of consumers appear to take all the available Iron that there is to sell. Those that are using large lots are contracting for from 1000 to 3000 tons at a time, with no view to provide for the far-off future. The producers appear to think that there is no prospect of prices going down, but that the present figures will be maintained at least during the balance of the year. Consumption with Southern foundries is increasing every month, and several new foundries that are now being built in different parts of the South will materially add to that increase. The interest that is now being felt in the construction of new furnaces is greater than it ever was, and there is no question but the coming year will witness the inauguration and completion of several new plants, which will, of course, be constructed under the most modern plans and specifications.

## St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st., ST. LOUIS, August 19, 1889.

**Pig-Iron.**—The movement in Pig has steadied itself and now assumes a strictly legitimate appearance. The absence of sales for speculative purposes is noticeable and the demand emanates from manufacturers who have immediate use for the Iron. The bulk of sales during the past week has been for the better grades of Iron and prices have been generally satisfactory. Reports from various furnaces are indicative of further improvement, as the stock on hand is light, and the outlook is such that they do not feel disposed to book orders for delivery later than October 1. Whether the result will verify the judgment of those interested is a question, and the outcome will be awaited with interest. Prices are firm and generally adhered to, although sales are occasionally made at figures that are considered low. For instance, an order for 1000 tons Gray Forge was booked during the past week, to be delivered at a near-by point, at \$13.75; terms cash. This is nearly 50¢ below the market, and it is doubtful whether the sale could be duplicated, as the general condition of affairs does not warrant such low figures. For ordinary-sized lots we quote as follows for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry,	\$15.75 @	\$16.00
Southern Coke, No. 2 Foundry,	14.75 @	15.50
Southern Coke, No. 3 Foundry,	14.50 @	14.75
Gray Forge.....	14.00 @	14.25
Ohio Softeners.....	17.00 @	19.00
Lake Superior Charcoal.....	20.00 @	21.50

## Missouri.

Charcoal Foundry, No. 1.....	16.25 @	16.50
Charcoal Foundry, No. 2.....	15.00 @	15.50

## Tennessee.

Charcoal Foundry, No. 1.....	17.50 @	18.00
Charcoal Foundry, No. 2.....	17.00 @	17.50
Connellsville Coke, f.o.b. East St. Louis,	\$4.40;	St. Louis, \$4.55.

**Bar-Iron.**—Mills are complaining that they are unable to fill orders, and the situation from this point of view is daily growing worse. Jobbers report an exceptionally large demand, and say the business for the month of July was the largest for years, while indications point to a continuance of the activity for an indefinite period. Prices are firm, with an advancing tendency. Mills quote from 1.70¢ to 1.75¢, and lots from store are offered at from 1.80¢ to 1.85¢.

**Barb-Wire.**—Notwithstanding the fact that August is generally one of the poorest months of the year in the Barb-Wire trade, yet this month, so far, has proved an exception, and mills are kept well employed. Should the demand continue, prices are in a fair way to advance when the fall trade sets in. For the present we quote as follows: From 2.75¢ to 2.80¢ for Painted, and from 3.35¢ to 3.40¢ for Galvanized; carload lots at from 2.65¢ to 2.70¢ for Painted and 3.25¢ to 3.30¢ for Galvanized, f.o.b. St. Louis.

## Cleveland.

CLEVELAND, August 19, 1889.

**Iron Ore.**—The market retains all its active and buoyant features and the inquiry for several of the particularly valuable Ores is in excess of the probable output of the mines. Sales to date are estimated all the way from 5,000,000 to 5,250,000 tons, with the probabilities in favor of the latter figures. Many of the furnaces have finished purchasing and many others need only a few thousand tons more. Sales exceeding 5000 tons in amount are, in consequence, becoming rare, while 2000 to 3000 ton orders are being rapidly placed. There has been a steady demand for non-Bessemer Ores during the week just closed, and numerous sales at \$3.75 @ \$4, f.o.b. vessels, Cleveland, are reported. Gogebic Bessemer at \$4.75 @ \$5 are being rapidly cleared up. The richer mines in the Gogebic district are obtaining \$5.25 ¢ ton for their product without difficulty. The Republic mine is making its concluding sales at \$5.75, and the Vermillion mines are rapidly closing orders for scattering lots running from 1500 to 3500 tons. Over 220,000 tons of Ore have been unloaded at Lake Erie ports during the week, and the season's receipts are almost 2,000,000 tons in excess of the record at a corresponding period in 1888. Vessel rates remain stationary and any number of carriers can be obtained at the present figures.

**Pig-Iron.**—Prices for both Mill and Bessemer Irons have advanced from 25¢ to 50¢ ¢ ton, but the demand is stronger and the buying movement more active than for several months. Buyers are anticipating future wants in their present purchases and carload orders are no longer considered. Many orders for round lots of Bessemer have been placed during the week at prices fully 50¢ ¢ ton over last week's quotations. Red Short and Neutral Mill Irons seem just as popular. So little Southern Iron is now being purchased here that it is scarcely considered a factor in analyzing the local situation.

**Scrap-Iron.**—There is an excellent demand for Old American Rails at \$23. Old Wheels are worth \$17.50 @ \$18 and Selected Axles \$25.50.

**Manufactured Iron.**—Common Bar Iron at 1.70¢ from store is being ordered



as rapidly as it can be supplied. Sheets are still scarce and the prices obtained in advance of regular quotations.

## Louisville.

LOUISVILLE, KY., August 17, 1889.

**Pig-Iron.**—The market at the close was very firm, owing to advices of advance on Bessemer at Pittsburgh and favorable reports from all sections of the country. The first part of the week witnessed some slight shading in prices, which, however, has now been entirely checked. It is thought, owing to the heavy demand for actual consumption, that a further increase will take place, and an advance of 25¢ @ 50¢ is expected as the minimum. Buying has been free on the part of those who have not laid in a supply, and sales made have been large. The foundries report large orders on hand, enough to keep them running for several months, and the outlook for steady work is better in this vicinity than for several years past. Quotations are as follows:

Southern Coke, No. 1 Foundry.	\$15.00 @	\$15.50
Southern Coke, No. 2 Foundry.	14.50 @	15.00
Southern Coke, No. 3 Foundry.	13.75 @	14.25
Gray Forge	13.25 @	13.75
White and Mottled, different grades	12.75 @	13.25
Silver Gray, different grades.	13.25 @	13.75
Southern Charcoal, No. 1 Foundry	16.50 @	17.00
" No. 1 Mill.	15.00 @	15.50
Southern Car-Wheel, standard brands.	22.00 @	23.00
Southern Car-Wheel, other brands	18.25 @	19.75
Hanging Rock Coke, No. 1 Foundry	15.75 @	16.25
Hanging Rock Charcoal, No. 1 Foundry.	19.75 @	21.25
Hanging Rock, Cold Blast.	21.00 @	23.00

Geo. H. Hull & Co. have been appointed exclusive agents for the sale of the Florence Iron made by the North Alabama Furnace Company, at Florence, Ala. The ore is all brown hematite and the coke Pocahontas. The furnace expects to make Foundry and Forge Irons.

## Cincinnati.

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, August 12, 1889.

**Pig-Iron.**—The past week has been a quiet one in local Pig-Iron circles, at least; the volume of transactions has not been large, but a confident feeling has been entertained and a strong tone has prevailed, with full prices realized for the Iron sold. The Pipe works across the river are reported to have booked orders for 10,000 to 12,000 tons, and it is anticipated that Pig-Iron must be purchased to cover these contracts, but no large sales of Foundry grades have been made public, and Silvery-Gray Iron has continued scarce. A fair movement in moderate amounts of Virginia and Ohio Irons has continued. There has been further activity in Car-Wheel Iron. The placing of orders by the Pennsylvania Railroad Company for 2000 cars, calling for such Iron, local parties have sold 2000 tons Southern at \$23.25. Another order for 1200 tons is upon the market, with the probability that it will be taken at \$23.50, cash. Several 100-ton lots of No. 2 Southern Foundry have been sold at \$14.50 spot cash, and 1000 tons Gray Forge sold at \$13.50, cash. The general range of prices is unchanged. Mottled Iron has sold readily with a little firmer tone, but the bulk of sales have been at \$12.75, although small amounts have brought \$13, in cash basis. There is still some difficulty about reconciling deliveries, but no serious trouble. The following are approximate prices current here at the close for cash, f.o.b.:

Southern Coke, No. 1	\$15.25 @	\$15.50
Southern Coke, No. 2	14.50 @	14.75
Southern Coke, No. 3	13.75 @	14.00
Ohio Soft Stone Coal, No. 1	16.00 @	16.50
Ohio Soft Stone Coal, No. 2	15.00 @	15.50
Mahoning and Shenango Valley	16.00 @	16.50
Hanging Rock Charcoal, No. 1	20.00 @	22.00

Hanging Rock Charcoal, No. 2	19.00 @	21.50
Tennessee and Alabama Charcoal, No. 1	17.50 @	18.50
Tennessee and Alabama Charcoal, No. 2	16.50 @	17.50

### Forge.

Gray Forge	13.25 @	13.50
Mottled Neutral Coke	12.50 @	12.75
Cold Short		13.00

### Car-Wheel and Malleable Irons.

Southern Car-Wheel	23.00 @	24.00
Hanging Rock, Cold Blast	22.00 @	25.00
Lake Superior Car-Wheel and Malleable	20.00 @	20.50

**Old Material.**—The demand for Old Rails has continued to increase, and the offerings being small a stronger tone has prevailed, with \$24 paid, and at the close it is reported that \$24.85 has been bid at Pittsburgh. Old Wheels, too, have met a better demand and ruled firmer, being quotable at \$19, cash, here.

**Manufactured Iron.**—There has been a good demand for Bar, Sheet and other Manufactured Iron for various prices, and a strong tone has prevailed, but without further advance in prices.

**Nails.**—There has been a fair jobbing trade and a firm tone has prevailed. Iron and Steel Nails, 12d to 40d, sell at \$1.85 @ \$1.90  $\frac{1}{2}$  keg, with 10¢ rebate in carload lots, at the mills. Steel Wire Nails sell at \$2.40 for 60d.

## Detroit.

WILLIAM F. JARVIS & Co., under date of August 19, 1889, say: All doubt concerning the strength and present good condition of the Iron market should be dismissed. A close survey of nearly all of the furnaces in the North shows small stocks on hand and little or no Iron unsold. Bessemer Pig, together with Lake Forge Iron, has advanced \$1  $\frac{1}{2}$  ton, and is very firm. Southern Forge has also advanced about the same amount per ton. Foundry grades have not been forced as high in proportion, but are scarce. Lake Superior Charcoal Pig, which we have stated as being strong for a month past, has also been advanced, owing to the heavier demands for balance of this year's delivery than the makers can furnish; from 50¢ to \$1  $\frac{1}{2}$  ton is being asked and obtained for most brands. Sales at these latter figures, being of good proportions, lead the sellers to expect even higher figures in the very near future. With this favorable outlook we quote as follows:

Lake Superior Charcoal, all numbers	\$19.00 @	\$19.75
Lake Superior Coke, all ore	18.00 @	18.50
Lake Superior Coke, cinder mixed	17.50 @	18.50
Standard Ohio Black Band	17.50 @	18.50
Southern No. 1	16.50 @	17.00
Southern Gray Forge	15.00 @	15.50
Southern Silvery	16.00 @	16.50
Jackson County (Ohio) Silvery	18.00 @	18.50
Old Wheels	18.00 @	19.00

## New York.

Office of *The Iron Age*, 65 and 68 Duane street, NEW YORK, August 21, 1889.

The well-known firm of John Williams & Co., of Liverpool, tersely summarizes the foreign markets in an interesting letter to A. R. Whitney & Co., of this city, through whose courtesies we are allowed to quote the following:

We note the state of trade on your side. The works here in many cases are full up to the end of the year, and the same applies more or less to a good many works in Germany, and there is nothing, as far as we can see, that would prevent your people putting up their prices £2 @ £3  $\frac{1}{2}$  ton. Orders are pouring into this country for thousands of tons on export account, besides an enormous home trade, but none of our makers are in a position to tackle them, unless delivery could be taken at some indefinite date. The result is that prices may be said to be advancing every day, and the demand is greater than at any time during the last 25 years.

Coming from such a source this letter emphasizes facts which should be before both buyers and sellers in this country at this juncture. Our consumption is enormous now, and it will take very little addition to it to bring it up to our full productive capacity. We have so long been accustomed to look upon the latter as far beyond our requirements that the gradual, almost imperceptible rise toward it has not been duly appreciated. Should consumption finally attain it, and we repeat that it is not far off, prices will start with a jump. It is beyond a question that no resistance to a rise can come from abroad.

**Pig-Iron.**—The situation is unchanged, though on the whole sellers do not report as much business for August as they booked for June and July. The majority appear to have well-filled order-books, and there is a tendency to abstain from selling beyond early deliveries, a hopeful turn prevailing, so far as the future is concerned. Some little urgency to sell is reported on the part of those having a surplus of Northern Mill-Iron, while in Foundry grades new Southern producers are striving for some business as a starter. Quotations are about as follows: No. 1 Anthracite Foundry, at tide-water, \$17 @ \$18; No. 2, \$16 @ \$17; Gray Forge, \$15 @ \$15.75; Southern No. 1 Coke Foundry, delivered at New York, \$16.50 @ \$16.75; No. 2, \$15.25 @ \$15.50; No. 3, \$15 @ \$15.25.

**Scotch Pig.**—Very little business is transpiring, and quotations remain nominally at \$20 @ \$20.50 for Eglinton; Dalmellington, \$20.25 @ \$20.50; Summerlee, \$22.25 @ \$22.50, and Langloan, \$22 @ \$22.50.

**Spiegeleisen.**—No further transactions of any magnitude are reported. A consumer who had occasion to ask for bids on a lot of about 500 tons of 20  $\frac{1}{2}$  for delivery over the next month, found \$29.25 the very lowest figure named, the majority quoting \$29.50 and \$30. Ferro is strong at \$61 for 80  $\frac{1}{2}$ . With few exceptions the leading Rail mills are supplied with Spiegel and other grades for some time to come. The American producers are sold up.

**Wire Rods.**—The foreign market continues to advance abroad. As an instance a buyer of a certain kind of Spiegel Rods was forced to pay \$52, when a few weeks since he purchased a small lot at \$48, and prior to that had been buying at \$44. Delivered at Eastern works Domestic Rods are quoted \$43 @ \$43.50.

**Steel Billets.**—We learn of sales of 2000 tons of Billets by an Eastern mill to go to Pittsburgh. We understand that it is an order for a special steel, to be used for Axles, and that the sizes are unusual, so that a round price was obtained. Another Eastern mill has sold upward of 3000 tons of high-carbon Billets, at private terms, to a near-by works. Eastern works quote nominally \$29 @ \$30 for 4-inch Billets.

**Finished Iron and Steel.**—Structural mills here know nothing of the alleged uprising of the bridge manufacturers against the "extortions" of the mills. Bridge-builders, in spite of the fact that they have been rushed with work have been cutting prices right and left for a long time, and low figures have again cropped up during the week on a relatively small job of elevated work in this city. It is reported that 3.67¢  $\frac{1}{2}$  lb, erected, was named. There have been some contracts on Architectural work, but on the whole the current business is moderate. Plates are in very good shape and are strong. Among the contracts recently placed was 2000 tons for the new Brazil steamers, at private terms. Of Steel Hoops a leading consumer has taken

about 1500 tons at a low figure, the supply coming from Pittsburgh, and another lot of 500 tons was also placed. In Black and Galvanized Sheets the aggregate demand is good, though prices are little changed. We quote as follows, on dock: Sheared Plates, 2.15¢; Universal Mill Plates, 2.20¢ @ 2.25¢; Angles, for the smaller sizes, 2¢ @ 2.10¢; for larger sizes, 2.25¢; Tees, 2.4¢ @ 2.6¢; Beams and Channels, 2.8¢. In Plates, Steel Tank is 2.3¢ @ 2.35¢; Shell, 2.5¢ @ 2.6¢; Flange, 2.75¢ @ 2.8¢; Fire-Box, 3.25¢ @ 3.75¢. For Bars we quote: Common, 1.6¢ @ 1.65¢, Medium, 1.65¢ @ 1.7¢, and Refined, 1.8¢ @ 2¢. Hoops, 2¢ @ 2.1¢; Galvanized Sheets, 65 ¢ and 5 ¢.

**Steel Rails.**—In the East the market has been quiet, \$28 being the general quotation, although it is claimed by buyers that small lots can be purchased at that figure. As yet little winter and spring work has come into the market, and it will not be until early in September that the annual struggle begins. In the West 16,000 tons have been closed. The works are very busy, and to judge from the heavy purchases of Pig-Iron reported from Pittsburgh, 65,000 by two concerns, a good deal of work is in hand.

**Track Supplies.**—Business is quiet. We quote: Fish-Plates, 1.85¢ @ 1.90¢, delivered; Spikes, 1.95¢ @ 2¢, and Bolts 2.65¢ @ 3¢.

**Old Material.**—Buyers have advanced their bids to \$23.50 and \$24, but without leading to business. The small stock here is held as high as \$25.50 for Tees and \$27 @ \$28 for Double Sheets, figures which, however, are nominal. No. 1 Wrought Scrap, at Jersey City, is \$21.

## Financial.

The most favorable factor at present in the business situation is the continued promise of abundant crops of nearly all descriptions, so that now it is confidently believed that the wheat surplus available for export will range somewhere between 160,000,000 and 175,000,000 bushels, an amount not equaled since 1880, and corn likewise promises a yield much beyond earlier expectations, closely approximating that of last year. One of the most intelligent Western estimates places the aggregate of cereal production in the United States this year, should no unfavorable weather conditions arise, far in excess of the best years on record. In Minnesota and Dakota, according to the last Government report, spring wheat is practically decreased. The crop in Minnesota is pronounced "the finest for years." Cotton is maturing well and new lots have been received in Augusta and Charleston. The tobacco crop will probably be deficient, while the wool crop is likely to equal that of recent years. The anomalous condition of the anthracite coal trade worries the producers, the output being apparently beyond control. But cheaper fuel makes cheaper steam. In the Pennsylvania coke regions trouble has ceased. With good crops and the industries recovering the financial feature naturally excites the most inquiry. Activity in jobbing circles is the most prominent feature of the dry goods trade, which is nearing the time when the height of the season is usually realized.

On the Stock Exchange the markets are dull. The trusts shares have apparently lost their prestige. The Grangers were favorably affected by reports from the West in regard to the movement of new wheat, and by the declaration by the Quincy of their regular quarterly dividend of 1 ¢. Advices telegraphed from the West that the cut by the Chicago, Burlington and Northern would really

prove beneficial to the American lines by competing directly with the Canadian roads, against which the movement was ostensibly directed, assisted the general market. On Monday the coal stocks were raided on account of the death of E. S. Higgins, a large holder of Lackawanna, the bears assuming that sales might be pressed.

On Tuesday the trust speculation was enlivened by Sugar Trust, which after closing at 107 on Monday opened at 109 in consequence of Judge Ingraham's decision denying the application for an injunction. But after rising to 109½ it closed at 108½ @ 1. The general tone was strong, in the expectation that the Treasury would buy a large block of bonds, of which the First National Bank is said to be carrying about \$10,000,000.

United States bonds are quoted as follows:

U. S. 4½s, 1891, registered.....	105½
U. S. 4½s, 1891, coupon.....	106½
U. S. 4s, 1907, registered.....	128
U. S. 4s, 1907, coupon.....	128½
U. S. currency 6s.....	118

The weekly statement of the associated banks showed a decrease in the amount to reserve held above the 25 ¢ legal requirements of \$3,440,600. This decreases the surplus held to \$3,550,085. In loans there was an expansion of \$1,434,200. Deposits showed a decrease of \$2,179,600. Specie decreased \$2,565,900, and legal tenders decreased \$1,419,600. As had been anticipated, the West drew heavily on this center for funds, and more or less stringency might have been felt had not prominent brokers like Drexel, Morgan & Co. and Henry Clews & Co. put out considerable amounts at low rates. Respecting future demands Wall street looks to the Treasury for relief should occasion arise. No uneasiness is felt at the Treasury Department, it is said, over the fact that the surplus in the Treasury now exceeds \$70,000,000. The falling off of bond offerings, which has caused the increase in the surplus, is attributed to the absence of any demand for money during the dull season, and it is expected that when the time comes to move the crops quite as many bonds will be offered as the Treasury will be able to take. Pension payments for the present month are estimated at \$18,000,000, and the surplus will be reduced accordingly.

The bank exchanges in 43 cities last week aggregated \$951,899,542, against \$875,469,719 last year, an increase of 7.8%. Outside of New York the increase was 5.8%; New York increased 10.5%. The total east-bound tonnage from Chicago last week was 47,400 tons, against 46,542 the same week last year. The Imperial Bank of Germany's specie was reduced 6,400,000 marks last week. Messrs. Baring Bros. have contracted with the Government of Uruguay for a loan of \$15,000,000 for the construction of railways.

In describing the influence upon banks of the recent failures in New England, the Boston *Advertiser* makes some interesting comments upon the change that has gradually come over modern banking, in the growth of the practice of discounting "single-named paper." "One innovation," the writer says, "has proved a failure—that of accepting single name notes in place of what is called business paper—i. e., notes endorsed by the maker and also by the party to whom he has sold merchandise, and notes, therefore, which represent merchandise. Not all the banks have made this innovation, but of the very large number which have done so nearly all have cause to regret their course. The willingness of the banks to buy single-name paper has had two bad results; it has driven business paper, so called, almost out of the market, and it has led to such an increase in the custom of issuing notes to permit the payment of merchandise in cash that, in all the recent failures, the indebtedness to

the banks comprise about 75 % of the entire liabilities. . . . The snare which has involved the recently-failed firms has been that of speculation either in their own line of business or in stocks, and the way was made easy by the readiness with which money was borrowed on fictitious credit. "As above intimated, many banks find themselves heavily involved, and, as the *Providence Journal* remarks, have received a warning that will lead them to inquire respecting the wisdom of their methods."

Time loans show a hardening tendency. A short loan on Government bonds was made at 4½ %, and the rate on trust stocks for 60 days to four months is quoted at 6 %. Commercial paper is in good supply, but the demand light. Rates are 3¼ % @ 5¼ % for 60 to 90 day indorsed bills receivable; 5¼ % @ 6¼ % for four months' acceptances, and 6 % @ 7 % for good single names having from four to six months to run.

The general markets are quiet, excepting raw sugar, which dropped on Tuesday fully ¼¢. Spot cotton was ¼¢ higher wheat and breadstuffs dull and weak. Exports from New York for the week amount to \$6,538,000.

A new East and West trunk line from the Atlantic sea-board, with Pittsburgh as one of the pivotal points, is projected, which, it is said, will be backed by several iron and coke manufacturers and financiers, including Austin Corbin, Andrew Carnegie and Harry W. Oliver. Mr. Carnegie will devote his capital and energy to the construction of the new proposed road. The new trunk line will be composed of the Central Railroad of New Jersey and Reading Railroad system from New York via Harrisburg to Shippensburg, in the Cumberland Valley, and from thence possibly by the construction of an entirely new line to a point of connection with the Pittsburgh and Western.

## Metal Market.

**Copper.**—Since our last report Spot Copper declined in the London market from £43. 5/ to £43. 2/6 yesterday, futures remaining unaltered, £42. 10/; sales 450 tons. Here the new pool agreement was since ratified by the mining companies, the management being entrusted to a committee which will try to uphold the scale of prices settled upon—i. e., 12¢ for Lake, 11½¢ for Arizona and 10½¢ casting brands, to consumers who appear resolved to limit their operations to the supplying of current requirements, there being no inducement to carry a surplus. In a jobbing way the dealers ask ½¢ @ ¾¢ in addition to the figures named.

**Tin.**—This metal declined during the week from £91. 5/ spot, to £89. 10/ yesterday, and futures from £91. 15/ to £90. 2/6. Sales, 300 tons. Our own market at first weakened, but with greater activity gradually developing it strengthened, 10 tons spot being taken at 20.20¢, and 30 tons September, together with 50 tons October, at 20¢. During the first six months the Straits Settlements shipped to the United States the large amount of 72,625 piculs, as compared with 13,377 piculs same time last year; 43,075 in 1887; 31,533 in 1886; 16,051 in 1885, and 26,651 in 1884. At the close, with a slight improvement in London, the market winds up at 20½¢ @ 20¼¢, spot. On first call at the Metal Exchange to-day 10 tons October Tin brought 20.10¢. **Tin-Plates.**—A fair demand has prevailed during the week, leading to greater activity, with Coke Tins and Wasters slightly higher. On the other side there is again an improvement of 3d @ box. Makers show great strength, claiming that they have booked orders three or four months ahead. We quote large lines, ordinary brands, @ box: Siemens-Martin Steel,



Charcoal finish, \$4.75 @ \$5.50; Coke finish, \$4.60 @ \$4.65; Ternes, \$4.12 @ \$4.30; Coke Tins, \$4.25 @ \$4.35, and Wasters \$4.10 @ \$4.12½.

**Lead**—Domestic Lead has been dull, flat and unprofitable to deal in for the week, there not being a single sale to make a quotation from, only some 200 tons changing hands jobbing. The quotation is 3.80¢ @ 3.90¢, with the same listless feeling at the close. St. Louis quotes 3.70¢ and Chicago 3.75¢.

**Spelter**.—There has been more doing in our market, and no Common Domestic can now be had for less than 5.20¢ @ 5.25¢, while Silesian, again 7/6 higher in London, has to be quoted 6¼¢, nominally.

**Antimony**.—While the demand is good, there is no stock. We quote Cookson's 18½¢, and Hallett, 16¼¢ @ 16½¢.

### New York Metal Exchange

The following sales are reported:

THURSDAY, August 15.	
10 tons Tin, October.....	20.20¢
25 tons Tin, September.....	20.15¢
FRIDAY, August 16.	
35 tons Tin, August.....	20.05¢
25 tons Tin, September.....	20.00¢
25 tons Tin, October.....	20.00¢
50 tons Tin, October.....	20.10¢
50 tons Tin, August.....	20.20¢
25 tons Tin, September.....	20.05¢
TUESDAY, August 20.	
10 tons Tin, spot.....	20.20¢
35 tons Tin, September.....	20.00¢
50 tons Tin, October.....	20.00¢
WEDNESDAY, August 21.	
10 tons Tin, October.....	20.10¢

### Imports.

#### Hardware, Machinery, &c.

Ameral Abra, Mach'y, cse., 1  
Ansonia Clock Company, Mdse., cs., 12  
Baker, Hermann & Co., Mdse., cs., 10; Arms, cs., 8  
Curley, J. & Bro., Cutlery, cs., 2  
Field, Alfred & Co., Mdse., cs., 20  
Fischer, Mach'y, cs., 4  
Folsom, H. & D., Arms Co., Arms, cs., 3  
Gardner, A. K. & Co., Mach'y, cs., 2  
Graef Cutlery Company, Cutlery, cs., 5  
Hartley & Graham, Arms, cs., 16  
Johnson, J. & Co., Mach'y, pkgs., 45  
Lau, J. H. & Co., Arms, cs., 4  
Merchants Despatch Co., Arms, cs., 20; Anvils, 20  
Newton & Shipman, Files, cks., 4  
Pratt & Farmer, Hdw., cs., 6  
Rotterdam S. S. Co., Arms, cs., 20  
Sheldon, Geo. W. & Co., Arms, cs., 10  
Schoverling, Daly & Gales, Arms, cs., 8  
Ward, James E., Mach'y, cse., 1  
Weierker, Mach'y, cs., 4  
Werlemann, H., Arms, cs., 23  
Wiebusch & Hilger, Mdse., cs., 20; Arms, cs., 12; Vises, 80; Hdw., cse., 1  
Order: Mach'y, cs., 40; Pans, 100; Buckets, pkgs., 24

### Coal Market.

In the Anthracite Coal trade prospects are by no means cheerful, viewed from the producers' standpoint. The demand from consumers continues slow and backward, falsifying all predictions, while the output goes on without diminution. In the face of this situation it is proposed to advance schedule prices at the next meeting of Coal managers, 28th inst., but inquiry at quite a number of company's offices discloses the fact that opinions vary widely respecting the best course to be pursued. The Reading Company, on the one hand, is represented as favoring an advance on freight and Coal together equal to 25¢. a ton, an output of about 26,000 tons a day being readily absorbed. The Lehigh Coal and Navigation Company, on the contrary, are reported as favoring "a stable price, instead of constant changes when the market does not warrant them." The Lehigh mines, it is well known, have been much interrupted by floods, so that many of the collieries are unable to fill their orders, with no sales at a reduction. On account of the difficulty of fixing a price acceptable by all, one of the operators contended that the day for fixing a

circular price is over. In New York the market is "soft," prices being flexible, with sales in many instances on a basis of about \$4 7/8 ton for Stove. Quotations are: Free Burning, f.o.b., Broken \$2.90; Stove, \$4.40; Egg and Chestnut, \$4.15. Production for the week ending August 17, 790,735 tons, a decrease of 134,000 tons compared with the same week last year. Since January 1 the aggregate is 19,968,000 tons, a decrease of about 1,000,000 tons, compared with 1888. The Lehigh Valley Company's assumption of the right to recoup their losses by the great strike by the free production now is not approved. Readingships for the week were 153,000 tons, of which 39,000 tons were delivered at Port Richmond and 20,000 to Port Liberty. Bituminous Coal is active and all supplies are readily absorbed. Cumberland reports for the week 60,000 tons; Clearfield, 71,000; Buck Creek, 27,290; Pocahontas, 25,000.

### British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, August 21, 1889.

For Block Tin there has been a strong demand, but, despite that fact and absence of confirmation of former reports of heavy shipments from the Straits, the "bear" party have kept prices down. It is found that, instead of being heavy, the Straits shipments during the first half of the month were moderate and not equal to the apparent consumption. On the whole, the statistics show that the position is steadily improving and free from conditions warranting the persistent attacks by the bears. Spot sales reported to-day at £90, which is £1. 5/ below the price ruling a week ago, but 18/ above the lowest point.

Copper has undergone but little change during the week. Chili charters the past fortnight are advised as 800 tons. Rumors have circulation to the effect that an agreement has been arrived at between the French holders and the mining companies, but no particulars are given as to the character of the agreement. The presence of representatives of American producers has also led to reports of fresh negotiations with the liquidator of the old Comptoir and holders of large stock. There is also a rumor of a movement to limit production and thus enable a reduction of the surplus stock, to be made without detriment to the market value of the Copper.

Transactions in Copper furnace material have been large and at rather higher prices in most instances. James Lewis & Sons record for the first half of July includes 1950 tons Anaconda Matte at 8/6 and 500 tons Montana Matte at 8/3, all to arrive at Liverpool. Subsequent transactions aggregating 500 tons are reported at about the same prices.

There has been a further improvement in the demand for Tin-Plate, and a number of buyers have manifested anxiety to place orders at last week's minimum prices. Large orders for Cokes have been especially prominent in the demand. The Aberdare Company have suspended payment.

Business in Pig-Iron has been very active again, and, while prices have ruled irregular under the influence of realizations by holders of warrants, the market preserves

a stronger tone. There is still a lively speculative demand and a good business with consumers, to which the warrant market responded by recovering nearly all the loss of the early portion of the week. Shipments continue to be very heavy. Prices for makers' brands of Scotch Pig are held very firm, as are also those for Hematites, but Middlesborough Pig is a shade off from the highest point. Spiegeleisen is held for 2/6 advance, and Steel of all kinds remains firm. Staffordshire Bars are a little lower.

**Scotch Pig**.—Although less active than last week business has been brisk, and prices are held very firmly:

No. 1 Coltness, f.o.b. Glasgow.....	60/
No. 1 Summerlee, " ".....	58/6
No. 1 Gartsherrie, " ".....	57/
No. 1 Langloan, " ".....	58/6
No. 1 Carnbroe, " ".....	59/6
No. 1 Shotts, " at Leith.....	58/
No. 1 Glengarnock, " Ardrossan.....	55/
No. 1 Dalmeilington, " ".....	49/6
No. 1 Eglinton, " ".....	47/6
Steamer freights, Glasgow to New York, 4/;	
Liverpool to New York, 10/.	

**Cleveland Pig**.—The business has been less active, but prices have shown only slight changes. No. 3 Middlesborough quoted 43/6, prompt.

**Bessemer Pig**.—Purchases have continued large, and the market remains strong. West Coast brands, mixed numbers, 54/6, f.o.b. shipping point.

**Spiegeleisen**.—Demand fairly active and prices strong, with English 20 ¢ quoted 82/6, f.o.b. at N. W. England shipping point.

**Steel Rails**.—There is still a brisk demand and the market continues strong. Heavy sections quoted at £4. 17/6 and light sections £5 @ £5. 5/, f.o.b. at N. W. England shipping point.

**Steel Blooms**.—Moderate sales only and prices unchanged. We quote £4. 7/6 for 7 x 7, f.o.b. at N. W. England shipping point.

**Steel Billets**.—Less doing in these, but sellers firm. Bessemer, 2½ x 2½ inch, £4. 12/6, f.o.b. at N. W. England shipping point.

**Steel Slabs**.—A moderate trade passing and prices unchanged. Bessemer, £4. 15/, f.o.b. at N. W. England shipping point.

**Old Rails**.—The demand fairly active and prices firmer. Tees quoted at £3. 2/6, and Double Heads £3. 7/6, c.i.f., New York.

**Scrap-Iron**.—More doing in this line, but no change in prices. Heavy Wrought quoted £2. 2/6 @ £2. 5/, f.o.b.

**Crop Ends**.—A fairly active business and prices stronger. Bessemer quoted £2. 15/ @ £2. 17/6, f.o.b.

**Tin-Plate**.—Actual sales smaller than last week, but demand good and prices firm. We quote, f.o.b. Liverpool:

1C Charcoal, Alloway grade.....	15/9 @	....
1C Bessemer Steel, Coke finish.....	14/ @	14/3
1C Siemens " ".....	14/3 @	14/6
1C Coke, B. V. grade.....	13/6 @	13/9
Charcoal Ternes, Dean grade.....	12/6 @	....

**Manufactured Iron**.—There is a fairly active business, with prices for Staffordshire Bars irregular, but otherwise firm. We quote, f. o. b. Liverpool:

	£	s.	d.
Staff. Marked Bars.....	8	10	0
" Common ".....	6	17	6
Staff. Bl'k Sheet, singles.....	8	15	0
Welsh Bars (f.o.b. Wales).....	6	7	6 @ 6 12 6

**Copper**.—The market fairly active and prices steady. Merchant Bars quoted at £43, spot, and £42, three months' futures. Best Selected, £48.

**Tin.**—The market quieter to-day, but steady. Straits quoted at £90, spot, and £91 for three months' futures.

**Lead.**—Demand slow and prices barely steady. Quoted £12. 12/6 for Soft Spanish.

**Spelter.**—Demand has continued good and the market strong. Quoted at £21. 10/ for ordinary Silesian.

## Foreign Markets.

### EQUIVALENTS.

	Cents.
Franc, Peseta or Lira.....	19.3
Florin (Netherlands).....	30.6
Florin (Austria).....	35.0
Milreis (Portugal).....	\$1.08.
Milreis (Brasil).....	54.6
Mark (Germany).....	28.8
	Pounds
Kilogram.....	2.205
Picul.....	134.

### BRAZIL.

**PARA,** August 13, 1889.—*India Rubber.*—Exports have been freely bringing new fine Rubber, causing a slight advance.—*Per cable direct.*

### CHILI.

**VALPARAISO,** June 21, 1889.—*Copper.*—Sales have been restricted for the fortnight to 3863 quintals at \$15.15 @ \$15.70  $\frac{1}{2}$  quintal, \$15.75 equaling £40. 4/6, cost and freight,  $\frac{1}{2}$  ton. At the figures named Copper is offered sparingly, the depression and weighing down Copper industry affects seriously the state of trade generally in Chili. *Coal.*—Newcastle is firm at 39/ and Australian at 26/. *Exchange.*—90 days' sight in London closes at  $25\frac{3}{4}$ d for private bills.—*Weber & Co.*

### EAST INDIES.

**SINGAPORE,** July 9, 1889.—*Tin.*—Since the 26th ult. Tin has continued in small supply, but quite ample for the demand, which is within very small compass. Mining is going on steadily, so that supplies must be to some extent kept back, although confirmatory reports to that effect are still wanting. We close with sellers at \$33.25  $\frac{1}{2}$  picul. *Gum Copal.*—About 15 tons of very good Macassar and 25 tons of Manila at \$11 and \$5.80 respectively mark the bulk of the transactions during the interval. *Gum Damar.*—A fair but small parcel of Palembang quality has fetched \$20  $\frac{1}{2}$  picul. *Tonnage.*—Early in the fortnight 20/  $\frac{1}{2}$  ton for dead-weight were accepted, but in the absence of any large supply of room this month London steamer rates have hardened to 30/. More tonnage is in sight for August, when another collapse is expected. *New York via Cape.*—The berth is well supplied, but rates are unchanged. *For Boston.*—The Mystic Belle has sailed, but so far nothing has been calculated to follow her. *Exchange.*—Has advanced to  $3\frac{1}{2}$  for six months' credit drafts, at which we close very firm. Tin shipments from the Straits Settlements to the United States during the first six months sum up 72,625 piculs against respectively in 1888-1884: 13,377, 43,075, 31,533, 16,051 and 26,651.—*Gilfillan, Wood & Co.*

**PENANG,** July 4, 1889.—*Tin.*—The fortnight's receipts figure up 10,000 piculs. Europeans took 4600 piculs and Chinese 5400. Prices gave way from \$33.90 to \$33.40  $\frac{1}{2}$  picul, recovered to \$35 and now close at \$33.40, at which there are buyers for China, closing quiet.—*Schmidt, Rustermann & Co.*

**COLOMBO,** July 4, 1889.—*Plumbago.*—Has continued scarce. We quote at the close, in rupees,  $\frac{1}{2}$  ton: Large lumps, 145 @ 170; ordinary ditto, 125 @ 160; Chips, 80 @ 95, and Dust, 40 @ 65. The following amounts have been exported since October 1: To England, 122,533 cwt.; to Venice, 102; to Hamburg, 7419; to Antwerp, 12,439; to Bremen, 1254; to Holland, 437; to India, 139; to Australia, 392, and to the United States, 124,362; together, 269,067 cwt., against respectively in 1888-86, 202,434, 183,331 and 142,329. *Coir Yarn.*—Nos. 1 to 4 may be quoted at 7 @ 13 rupees  $\frac{1}{2}$  cwt. *Exchange.*—Six months' sight  $1\frac{1}{4}$ —*Volkart Bros., Ceylon and Malabar Coast, through their agent in New York, Mr. John W. Greene, 82 Wall street.*

**MANILA,** August 12, 1889.—*Hemp.*—There are buyers at \$13, against \$10.12  $\frac{1}{2}$   $\frac{1}{2}$  picul same time last year, equaling  $\frac{1}{2}$  ton, cost and freight, \$41. 15/, against \$33. 10/. Clearances for the United States since January 1 sum up 144,000 bales, against 99,000 last year; loading for do., 8000, against 10,000; cleared for England, 170,000 bales, against 221,000; loading for ditto, 5000, against 12,000; cleared for all other ports, 29,000, against 46,000; receipts at all ports since last cable, 16,000, against 17,000; since January 1, 371,000, as compared with 363,000 same time last year and 287,000 bales in 1887. *Freight.*—85, against 86,

*Exchange.*—Six months' sight on London,  $3\frac{1}{5}$ %, against  $3\frac{1}{5}$ —*Ker & Co., per cable direct to their agent in New York, Mr. Charles Nordhaus, 89 Water street.*

### SPAIN.

**BILBAO,** August 3, 1889.—*Iron Ore.*—Only a few single cargoes were bought during the week at 7/ @  $7\frac{1}{4}$  for Superior Rubios and 8/3 @ 8/6 Campanil. Freights have risen and still tend upward. There were shipped since January 1 2,356,570 tons, against 2,276,674 in 1888 and 2,676,032 in 1887. *Pig-Iron.*—Is rising.—*Bilbao Maritimo y Comercial.*

### BELGIUM.

**BRUSSELS,** August 10, 1889.—*Iron.*—French makers of Beams have raised their price to 11.50 francs  $\frac{1}{2}$  100 kg. at the works, instead of that figure f.o.b. at Antwerp, so that their competition is no more as formidable as it has been. The Belgian market is firm in consequence. Our branch railroads have ordered in Belgium 10,000 tons 21 kg. Steel Rails at 127 francs  $\frac{1}{2}$  ton, deliverable in two years, but may take half of them at once, five domestic steel works co-operating in the contract. The Congo railroad will also require 30,000 tons. Out of 48 blast-furnaces in Belgium 33 were in blast on August 1 and 15 blown out.—*Moniteur des Interêts Matériels.*

### HOLLAND.

**ROTTERDAM,** August 1, 1889.—*Tin.*—Following are the July Tin statistics in Holland:

	June 30, 1889, Slabs.	July 31, 1889, Slabs.	July 31, 1888, Slabs.
Banca stock on warrants.....	22,197	34,828	31,854
Billiton stock in Holland.....	28,458	35,410	14,643
Total.....	50,655	70,238	46,497
July deliveries of Banca.....	15,854	11,847	8,600
July deliveries of Billiton.....	7,060	7,615	10,370
Total.....	22,914	19,462	18,970
Banca deliveries since January 1.....	76,942	88,789	80,846
Billiton deliveries since January 1.....	39,894	49,003	50,811
Banca afloat.....	6,400	6,400	4,000
Banca stock, being a reserve for future auctions.....	171,802	149,209	118,455
Billiton afloat, about.....	51,720	34,120	47,200
Price of Banca.....	54 $\frac{1}{4}$	54 $\frac{1}{2}$	55
Price of Billiton.....	54	53 $\frac{3}{4}$	54

—*De Monchy & Havelaar.*

### RUSSIA.

**ST. PETERSBURG,** August 5, 1889.—*Petroleum.*—It is estimated that the increase of Baku Petroleum production will this year amount to 15,000 tons, against 250,000 tons in 1888.—*Journal de St. Petersburg.*

### GERMANY.

**HAMBURG,** August 10, 1889.—*Iron.*—The Rhenish-Westphalian Iron market remains active and firm. Spiegel has advanced to 69 under heavy American orders. All Pig-Iron is in lively request; the quotations are: Forge, 47 @ 63; Foundry, 59 @ 66; White Steel, 63 @ 64; German Bessemer, 58 @ 59, and Thomas, 52 @ 53. Finished continues in good demand both for home use and export, the inquiry extending to all articles. Wire-Rods may be quoted 125 @ 130; Steel Rails, 135, and ditto for mines, 125 @ 130. The June Pig-Iron production in Germany was 330,812 tons, against 306,299 in May and 350,404 in June, 1888; total first six months, 2,092,376 tons, against 2,106,714 in 1888. There were made last June, Forge and Spiegel, 153,343; Bessemer, 32,150; Thomas, 107,830, and Foundry, 37,450. The export of Steel Rails was 50,525 tons, against 56,530 in 1888; the imports 549 tons, against 646. *Metals.*—The export of Lead during the first six months was 16,777 tons, against 16,517 tons in 1888, and the imports 2604 tons, against 3004.—*Borsen-halle.*

The *Engineer* publishes engravings illustrating what is probably by far the most powerful set of rolling-mill engines in the world. They are the reversing engines that Messrs. Galloways have just made for the Palmer Shipbuilding Company, and are for driving a 44-inch train for making angle irons, H-irons, beams and joints. The cylinders of the engines are 56-inch

diameter by 6-foot stroke, and are fitted with Joy's valve-gear. The steam pistons are of steel, and the crank-shaft is built up of mild Siemens-Martin steel, the forgings of which weighed over 41 tons before being machined. The finished shaft has journals 21 inches diameter, and is of a total length of 23 feet 6 inches. To meet the requirements of Joy's valve-gear the piston-valve chests have been arranged on the upper side of cylinder, which enables the cylinders to be similar in every respect, and special provision is made for expelling the water which may be carried over in the form of wet steam. The engines are of massive construction, and the whole framing is so arranged as to receive the strains in the most direct manner possible. The engines are similar, with the exception of the adoption of Joy's valve-gear, and also with the further exception that they are of larger size, to Galloway's engines previously made and supplied to many English, Continental and American steel-works. They are constructed for a working pressure of 100 pounds to the square inch, and when running against suitable resistance would be fully equal to developing over 10,000 horse-power. The weight of the engines illustrated is nearly 300 tons. In the Antwerp Exhibition there was exhibited in model a very large rolling-mill engine, said to be of 11,000 estimated indicated horse-power, but the *Engineer* expresses the belief that these engines are actually the more powerful.

**Interstate Commerce.**—Following is a brief summary of the more important points covered by the annual report of the Interstate Commerce Commission for the year ending June 30, 1889:

<i>Mileage and Debt.</i>	
Total number of companies.....	1,488
Total number of miles.....	149,901.72
Stocks, bonds and other debts.....	\$8,127,787.731
Stocks, bonds and debt per mile.....	59.392
Total income.....	1,000,214,691

<i>Per Cent. Dividends Paid.</i>	
Common stock.....	2.03
Preferred stock.....	2.39
Bonds.....	4.24
Average payments on all capitalization..	3.06

<i>Cost of Transportation.</i>	
Cost of carrying passengers one mile....	Cents. 2.042
Cost of carrying one ton one mile.....	0.630
Cost of passenger train one mile.....	84.691
Cost of freight train one mile.....	96.050

Circular No. 1019, just issued by the joint committee of the Central Traffic Association, announces an advance in the pig-iron and special iron tariff to 25 cents for carloads and 30 cents for less than carloads. The advance takes effect on September 1, and is between New York and Chicago both ways. This makes the rate from Pittsburgh to Chicago 12  $\frac{1}{4}$  and 15 cents, whereas it was formerly 11 and 14 cents.

Regarding the alleged encroachments of the British in Africa, the North German *Gazette* says that any grievances of the German traders in East Africa will be duly adjusted. The extent of German territory in Africa, it says, is already out of proportion to the forces disposable for its protection. The experience of the Germans in Zanzibar affords an additional reason for concentrating within the present possessions

Several Western railroads connecting with Chicago, St. Paul and Milwaukee were fined last week for violating the law in regard to carrying coke. Chairman Walker ruled that the companies were liable only since March 1, when the agreement took effect, or the penalties would have been very severe.



## Hardware.

The market remains without special change, prices being steady and the volume of business moderate. There are, however, indications of increased activity and a good number of orders are being received from travelers, but in most cases they are for moderate lots. The principal features of the market in special lines are referred to below

### Cut Nails.

The market has again displayed symptoms of irregularity, and the low Western quotations are again a menacing factor. With raw material advancing as it has done and is still doing the outlook for the manufacturers is not bright. We quote Nails, carload lots, on dock, \$1.85 to \$1.90.

### Wire Nails.

There is but little change in the general situation. The card for the standard goods adopted by the Western Association is in quite general use, and a moderate volume of business is doing. Prices are somewhat irregular, and \$2.20 may be named as the general price for carload lots at factory. There is some disposition to offer less than carload lots at closely approximating figures.

The Wire Goods Company, Worcester, Mass., have issued under date of August 10 their Level list on Standard Wire Nails, which was printed in our last issue, and with it they send out their Level discount list for miscellaneous Wire Nails, to which we also referred last week. This list, the issuing of which is a new departure, adds another to the lists now before the trade. We print it in another column.

### Miscellaneous Prices.

The market for Rivets is in buyers' favor. Although there has been no open change in prices, manufacturers are solicitous to obtain orders, and concessions are sometimes made.

Since the breaking up of the combination on Wood Planes some two years ago the market has been almost constantly declining, until for the past month or two the goods have been sold at prices lower than ever before. There is also a disposition on the part of some of the leading jobbers, especially in the West, to offer the goods at closer prices to the retail trade, and this class of buyers within convenient distance from Chicago or St. Louis can probably purchase at about 70 per cent. discount for the second quality of goods.

An advance of  $\frac{1}{4}$  cent per pound has been made in the price of Peter Wright's Anvils. This advance is understood to be partly on account of increased cost of labor, and also in good part to the large demand for the goods. In fact, in many lines English manufacturers report an excellent trade, and in some they are crowded with orders. This is owing not so much to an increased demand from this country as to the extent of their general export business, which is referred to as in these lines especially good.

There has been a still further decline in both Manila and Sisal Rope, the prices of which have fallen off  $\frac{1}{4}$  cent per pound since our last writing. The market is still regarded as unsettled, and it is thought not unlikely that there will be a further decline.

Screws are regarded as in a better condition than they have been for a long time, and prices are regularly maintained. There is evidence that the very large stocks held by purchasers at the low price ruling before the formation of the combination are very nearly exhausted, and

manufacturers are beginning to receive orders of considerable volume from the trade. With the thorough understanding that exists between them prices are regarded as firm, and those who need Screws are buying with some confidence. There is, however, no disposition to buy in excess of near requirements.

The manufacturers of Steel goods held an important meeting last week, in which the principal matter for consideration was the question as to the continuance of their organization. After a careful discussion of the subject it was found necessary to abandon, at least for the present, the idea of renewing their arrangement for another year. Several plans were suggested and an effort made to meet the views of those who were dissatisfied with the working of the combination during the year which has just ended. The difficulties, however, appear to be insurmountable, and the prospect is that the market for this line of goods will continue an open one. This will naturally result in somewhat lower prices than have ruled during the past season, but it is not thought that the decline will be very great, inasmuch as the late prices were about a reasonable advance on the cost of the goods. It is probable, however, that there will be more or less irregularity, and that jobbers will not be able to sell the goods to as good advantage, owing to irregularities and cutting in the market.

The manufacturers of Wood goods also met last week, and adjourned without reaching an understanding. The matter is, however, held open in the hope that they may be able to reach an agreement by which the manufacture and price of these goods will be controlled during the coming season.

Joseph Lay & Co., Ridgeville, Ind., have issued a catalogue showing their line of Brooms and Brushes. In their introductory circular they allude to the quality and variety of the goods which they manufacture, and the prices at which they are sold are shown in the following sheet of prices, terms 30 days, with 2 per cent. discount for cash in ten days:

Brooms:		page		Per dozen.	
No. 4 R. M.	"	2	.....	\$2.50	
No. 4 Corn	"	3	.....	2.25	
No. 4 Factory	"	3	.....	1.50	
No. 4 Rattan	"	4	.....	3.50	
No. 4 St. Car	"	11	.....	2.50	
No. 1 R. M.	"	5	.....	3.50	
No. 1 Splint	"	5	.....	2.50	
Round Splint	"	5	.....	2.00	
No. 6 Corn	"	7	.....	2.25	
No. 6 Ex. Corn	"	7	.....	2.50	
No. 6 Heavy Corn	"	7	.....	3.00	
No. 4 Corn	"	5	.....	2.75	
No. Ex. Corn	"	6	.....	3.00	
No. 3 Corn	"	6	.....	2.00	
No. 3 Ex. Corn	"	6	.....	2.25	
No. 2 Corn	"	6	.....	1.75	
Push Brooms:					
		12 inch, page 12.	14 inch, page 12.	16 inch, page 12.	
		Bass. Rat- tan.	Bass. Rat- tan.	Bass. Rat- tan.	
3 Row	...	\$2.75 \$2.50	\$3.75 \$3.50	\$4.50 \$4.00	
4 "	...	3.00 2.75	4.00 3.75	4.75 4.25	
5 "	...	3.25 3.00	4.25 4.00	5.00 4.50	
6 "	...	3.50 3.25	4.50 4.25	5.25 4.75	
Add 15 cents per dozen to price of Rattan for Bass Mixed.					
Steel wire push Brooms, per dozen, page 10:					
12 inch 4 row	.....			\$4.00	
14 " 4 "	.....			4.50	
16 " 4 "	.....			5.00	
Handles fitted to Brooms, per dozen, 25 cents.					
Casting Brushes, per dozen, page 8:					
		6-inch block.	8-inch block.		
		1 in. 4 in. 5 in. 3 in. 4 in. 5 in.			
4 Row	...	\$1.75 \$2.00	\$2.25 \$2.00	\$2.00 \$3.00	
5 "	...	2.00 2.25	2.50 2.00	3.00 3.50	
Round Castings					
Handle Casting, back cover.	.....			\$3.00	
Large Flue Brush, page 9, per in. diam.	.....			4.00	
Spiral, per in.	.....			.50	
Iron-Covered Bloom Broom, per doz., page					
10, 12 in., 4 Row	.....			5.50	
14 in., 4 Row	.....			6.00	
16 in., 4 Row	.....			6.50	
18 in., 4 Row	.....			7.50	
Stepped Chill Broom, page 10, 12 in., 4 Row, per doz.					
Track Broom, page 11, per doz.	.....			5.00	
Frog Broom, page 11	.....			5.00	
Wood Fork, back cover page, per doz.	.....			4.00	
Horse Brushes, page 11, Kittool, per doz.	.....			4.50	
Rice Root	.....			4.00	
Upright Bass, page 13, 2 Row, per doz.	.....			3.00	
3 Row, per doz.	.....			3.50	

Barrel Brushes, page 13, per doz., Rice	
Root	4.00
Kittool	4.50
Machine Brooms, page 14, Curved, per doz.	18.00
16 1/4 x 3/4, per doz.	8.00
14 x 3/4, per doz.	6.00
Round Bass Kettle Brooms, per doz.	3.50
Molder's Brushes, per doz., page 15, No. 1.	
Soft	3.25
No. 3, Soft	3.75
No. 10, Crown Hard	3.00
No. 6, Flat Hard	2.50
Bench Brush, 7 in.	3.00
8 in.	3.50
9 in.	4.00
10 in.	4.50
Whisk and Bench Brooms, per doz., page	
15, Whisk Corn	1.25
Bench Corn	1.20
Bench Bass	1.50

It will be observed that among the Special Notices on page 49 is one in which L. M. Rumsey Mfg. Company call attention to an assortment of Western Files which they are offering at 75 per cent. discount.

The American Arms Company announce that they have decided not to make any more Semi-Hammerless Breech-Loading Guns or Automatic D. A. Revolvers. They also name special prices at which the stock on hand of these goods will be sold.

### Items.

Charles L. Campbell, for the past 20 years traveling salesman for the Peck, Stow & Wilcox Company, of 27 Chambers street, New York, accompanies Manager W. R. Walkley, of that company, on a short trip abroad. They took passage on the ocean greyhound, Augusta-Victoria, of the Hamburg-American Packet Company, which sailed from this port on the 22d inst. at 3 o'clock in the afternoon. The gentlemen will visit some of the more important points on the Continent, not omitting the Paris Exposition.

Hibbard, Spencer, Bartlett & Co., Chicago, Ill., issue under date August, 1889, a price-current relating to seasonable goods, including Axes, Husking Implements, Hay-Knives, Stove-Boards, Stove-Pipe Elbows, Coal-Vases, Stove-Shovels, Fire-Irons, Registers, &c. They have also issued a new Gun catalogue, in which about 140 pages are devoted to the illustration of a varied line of Guns, Revolvers, Gun Implements, &c., Fishing Tackle and other sporting goods. This catalogue will be found of interest, referring as it does to a large assortment of these goods, which are being handled in increasing quantities by Hardware men.

L. S. Starrett, Athol, Mass., has issued under date July 1 a new catalogue and price-list of his varied line of fine Tools. His recent additions are shown, together with the Tools which have become well-known to the trade.

Holt Mfg. Company, Cleveland, Ohio, have issued a new catalogue illustrating their Portable Forges. These include Miner's Bench-Forges, Machinists' Forges, Boiler-makers' and Railroad Forges and Blacksmiths' Forges, of which illustrations are given with descriptions and list prices. The Holt Combined Anvil and Vise is also presented.

The E. C. Meacham Arms Company, St. Louis, Mo., issue, under date August 15, price-list of Sporting Goods, Cutlery, &c. Tennis Goods, Bicycles, Camping Outfits and Tents are given a prominent place.

As announced on page 50, Haydock & Bissell, auctioneers, will sell on August 29 and 30 a line of Hardware Tools and House-Furnishing Goods, and also the balance of the Hardware stock of Mason & Brooks, Worcester, Mass.

L. H. Olmsted, Corona, N. J., issues a circular illustrating his improved Miter-Box No. 6, which has some new features.

The Hotchkiss & Upson Company, Cleveland, Ohio, have sold their plant, machinery, tools and stock to the Upson

**Wire Goods Company, Worcester, Mass.**

### "LEVEL" DISCOUNT LIST.

STEEL WIRE NAILS AND BRADS, IN 100-POUND KEGS.

Aug. 10, 1889.

[illegible]

EXTRAS.

List goods in kegs—list.  
List goods in 25 and 50 lb boxes, add 1 cent to list  
List goods in 1-lb papers.....add 2 cents to list  
List goods in 16-lb papers..... add 3 cents to list  
List goods in 14-lb papers..... add 6 cents to list  
Subject to discount.  
For barbing.....add 10 per cent. to the net

Extra-large Oval, Screw, Pin or other unusual heads, and Chisel, extra long clinch, or other unusual points, will be made to order at prices based upon the cost and the quantity ordered.

Tinned or Galvanized Nails, double the price of plain Nails of the same size.

Nut Company, of that city, who will assume and execute all unfilled orders and contracts. The accounts will be settled by the Hotchkiss & Upson Company. Referring to this purchase the Upson Nut Company state that they have heretofore had a large ownership in the Hotchkiss & Upson Company, and that as a result of merging their business with their own they will be in a better position to serve their customers' interests.

Udell Wooden Ware Works, North Indianapolis, Ind., have issued a catalogue for the season of 1889-90. In the display of their varied line of House-Furnishing Wooden Ware, Step-Ladders, Fancy Cabinet-Ware, &c., 54 pages are used, illustrations being given of the different articles with list prices. It is stated that some important additions have been made to their furniture line and that the style and finish have been improved.

Hamblin & Russell Mfg. Company, Worcester, Mass., have issued a new catalogue which illustrates their extensive line of Hardware specialties and Wire goods, of which illustrations and list prices are given. They call attention to the fact that during the year they have added to their list several new and desirable articles.

The Hartford Machine Screw Company, Hartford, Conn., have issued a convenient price-list containing the standard list adopted by the Association of Milled Machine Screws Manufacturers, and illustrating the different goods of their manufacture. This catalogue is conveniently arranged and calls attention to an important line of goods. The company also announce that they are prepared to manufacture all classes of small parts entering into the construction of instruments of precision, Printing-Presses, Engines, Electrical Appliances, Watches, Guns, Pistols, Sewing-Machines, Bicycles, Locks, &c.

George D. Winchell Mfg. Company, Cincinnati, Ohio, issue an elegantly printed catalogue and price list of Coal Vases and Hods. Illustrations are given of the dif-

ferent patterns, which include some new goods, and they call attention especially to the originality and elegance of the decorations. Attention is incidentally called to their Toilet-Ware, Winchell's Patent Oil-Tanks, Cabinets, &c., as well as to their general line of japanned, stamped and plain Tin goods.

The Biddle Hardware Company, Philadelphia, Pa., have issued a 64-page circular of seasonable goods for the coming fall. In it Rochester Lamps, Guns, Plated-Ware, Agate Ironware and other kitchen utensils are given prominent place.

Fred J. Hoyt, 197 La Salle street, Chicago, Ill., issues a circular describing his Bull-Dog Window-Locks and Anti-Window Rattlers. Illustrations are given showing the construction of the Lock and the manner in which it is applied to the sash with reference to its security and other advantages.

John Merry & Co., of this city, report a good inquiry for the brands of Tin-Plate handled by them, and in order to supply the trade with a better class of Roofing-Plates are offering an article which they guarantee equal to any in the market. Each sheet is stamped "Merry's Best." We are informed that the firm have lately purchased a large plot of ground in Hoboken, N. J., nearly opposite the present establishment on the North River, to which we understand the plant will be removed at the expiration of the lease of the premises now occupied, which will shortly occur. The new works will be connected with the adjoining railroads by means of a switch, affording excellent shipping facilities.

other Sheet-Metal wares suited to the household, the farm and the dairy, also supplies for hotel, railroad and factory use, and for export. Especial attention is directed to their foreign department, and the manufacturers state that they will furnish books in Spanish on request. All the articles with the exception of miscellaneous goods are the product of the Central Stamping Company. Because of the frequent changes in the market the publishers have wisely omitted prices, but will furnish a separate pamphlet, giving price-lists of the goods in the order they are presented in the catalogue. The opening pages of the publication before us contain views of the works of this company, shown by process engraving. The first illustration shows the works at Newark, N. J., followed by views of the two works at Brooklyn, at Woodhaven, L. I., and at St. Louis. The sectional divisions of the book are headed Deep Stamped-Ware, Shallow Stamped-Ware, Stamped Spoons, Tinners' Stamped Trimmings, Tinners' Miscellaneous Supplies, Japanned-Ware, Toys, Pieced Tin-Ware, Copper-Bottom Pieced-Ware, Heavy-Polished Tin-Ware, Planished and Hammered Ware, Britannia Goods, Copper and Brass Goods, Stove-Boards, Galvanized-Ware, Sheet and Wrought Iron-Ware, Milk-Cans, Enameled-Ware and miscellaneous goods. At the beginning the book is indexed by sections, and at the end is an alphabetical index of its contents. The volume is 11½ x 8½ inches in size, cloth bound, and contains over 300 pages. The paper, printing and cuts are all of the fine quality and high order usual to handsome trade publications of this sort.

Bailey, Farrell & Co., Pittsburgh, Pa., have lately published their catalogue "D" of plumbing and sanitary specialties. The publication is a handsome book, even in a trade where there are so many very expensive publications. It gives, first, cuts of Bath-Tubs of all kinds, some of which are illustrated by colored lithographs to show the fixtures in their true colors. The lithographing is very well done, and the appearance is very pleasing. Closets of various kinds occupy over 50 pages of the book, and these are followed by Cisterns and Wash-Basins, the latter also being illustrated in colored plates. Wash-Stands, Traps, Wash-Tubs, Sinks, Pipe-Fittings, Hydrants, &c., are taken up in the order named. All the goods are illustrated and a brief description accompanies the cuts. A price-list is also given in all cases.

Geuder & Paeschke Mfg. Company, Milwaukee, Wis., favor us with a circular and price-list relating to their fall goods for the current year. A very complete list of seasonable articles is illustrated, including Dripping-Pans, Elbows, Fire-Shovels, Stove-Boards, Dampers, Coal-Hods, Lamps, Tea-Kettles, Pipe-Collars, &c. In the back of the circular is a price-list of Mica.

### Business Methods.

There is necessarily a great deal of detail in the carrying on of business, and without attention to a thousand little things there cannot be a permanent success. The neglect of details will explain the failure of many merchants who have been busy with larger schemes, but absorption in details has with others caused the neglect of larger enterprises and plans by which their business might have been broadened and extended. Putting up Nails, checking invoices or sweeping the store may be very unprofitable work for the head of a large concern, and yet many merchants make the mistake of doing themselves such routine work, which might be done just as well by competent employees, while they themselves would be given the time and the strength for planning directly for the extension of the business and watching it in its gen-



eral course, so as to make its management more efficient; for in these days of restless enterprise and unceasing competition the successful business house must be branching out in new directions, modifying old methods and constantly in many ways adapting itself to new conditions. The concerns that are able to do this are those that are at the front and the top of the trade, or steadily moving thither. As bearing upon this subject in a general way the following article, entitled "Brains in Business," which we find in one of our exchanges, may be of interest:

One great secret of success in business—the secret, in fact, of business on a large scale—is to conceive of it as a matter of principles, not merely as a series of transactions. There are great merchants as there are great statesmen, and there are small merchants as there are small politicians, and the difference between the great and the small men is very much the same in both professions. The small politician works by the day, and sees only the one small opportunity before him; the small merchant does the same thing—he is looking for the next dollar. The statesman, on the other hand, is master of the situation, because he understands the general principles which control events; this knowledge enables him to deal with large questions and to shape the future. The great merchant does the same thing. His business is not a mere money-getting affair, not a mere matter of barter, but a science and an art; he studies the laws of trade, watches the general conditions of the country, investigates present needs, foresees future wants, and adapts his business to the broad conditions of his time and place. He puts as much brains into his work as does the statesman, and he ends by being not merely a money-getter, but a large-minded and capable man. An eminently successful business man of the statesman like quality said the other day that the more he understood of life the more clearly he saw that it was all done on business principles. By which he meant not only that the universe stands for the dollar, but that the universe is governed by unvarying laws, that promptness, exactness, thoroughness and honesty are wrought into its very fiber. On these business principles all life is conducted—if not by men, at least by that Power which is behind man. It ought to be the ambition of every young man to treat his business from the point of view of the statesman, and not from that of the politician.

The following communication from a Western business man refers to some practices in the trade which are to be condemned, and enforces the old and well-tried maxim that honesty is the best policy. Writing under the head of *Conscientiousness in Business* our correspondent says:

It may seem rather an old-fogy idea to have any conscience in business in these days of red-hot competition, when one must be a hustler to keep any way near the surface of the swim. From the oft-repeated remark that "a man can't do business nowadays and be honest"—that is, do a successful business—it would appear that anything bordering on a conscience was to be deplored; and a business carried on on such a plan was doomed to go down before the tide. A mechanic said not long since: "You can't believe any one any more; they will promise to pay for work at such a time, and when one goes for the money they laugh at you and say they have no money." A railroad passenger conductor said: "The time is past when a conductor can make anything more than his regular salary." There is a growing tendency to try to make more than is right to make, or more than an equivalent is given for. There seem to be no conscientious scruples about securing a job by saying it can be done at once, when it is well known at the time that to do the work at the time promised will necessitate putting off some other work

already promised. It seems perfectly right in some merchants to instruct their clerks to give short measure; that linseed oil may be sold at a less price than their neighbor sells it for; or that the coils of rope in the cellar shall be watered each morning, so the weight will be more per foot when it is sold. A traveling man remarked: "If I accidentally got into territory belonging to another man from our house I would not try to sell any goods, because every one has to use some stratagem with their customers in selling their line." Now, according to my old-fogy notions, a man's word should be more binding than his bond could be. If I promise a mechanic money at a certain time I expect to pay it. If I am working on a salary the amount received is all I expect to get from my employer. That any one buying from me would get full measure and just weight, and that my customers should know that no stratagem was used to get them to buy goods. The conscience of to-day is apt to be like a "pure rubber hose," the greater part impure. There is no necessity that makes dishonesty in any way right. The temptation to practice little tricks of trade for the sake of gain, usually small, grows with the practice; and while honesty for a time may seem not to succeed, the defect is generally found in some other direction than being conscientious in business.

#### Educating Customers.

There is a sense in which it is desirable that an intelligent Hardware man should educate his customers in regard to goods offered for purchase. He will often be able to promote both the interest of his customers and himself by means of judicious suggestions in regard to quality, kind of goods best adapted for certain uses, and information concerning new and improved articles which are put on the market. An intelligent consideration of the customer's interests will in such matters do much to advance the merchant's prosperity, as it wins the buyer's confidence and attaches him to the establishment. But there are other matters in which the merchant usually makes a mistake in giving his customer too much information. It is not often well for the retailer to inform his customer in regard to the cost of goods, or list prices, or to sell the goods ostensibly at a certain discount from a recognized list. This practice, which exists to a certain extent, especially in staple goods, has many inconveniences and results nearly always to the disadvantage of the merchant. This matter has been brought prominently to our attention by the correspondence in regard to the Wire Nail card. It will be remembered that in the interesting and suggestive dialogue, "How It Looks in the Country," the difficulty experienced by the merchant resulted principally from his attempt to sell the Nails at retail from the new card, thus involving the necessity of his explaining to his customer the fact and the reason of the change in price. This was the source of much of his difficulty and embarrassment. The merchant will, of course, be compelled to buy his goods on established lists and at as good discounts as he can obtain, and this method conduces very greatly to the convenience and the ease of buying; so much so that Hardware men are disposed to object seriously when they are constrained to buy at net prices, unless, indeed, as is often the case, it is made plain to them that the net prices given are lower than certain list and discount prices. It would, of course, be simpler for the retailer to quote prices generally on the same basis as that on which the goods are bought, selling, for example, Locks and Coffee-Mills at a certain discount. But this would be unwise policy and would be found in practice to be attended by many difficulties. On such goods as we have mentioned it is the general practice to name on each article a certain price, and

few Hardware men would think of selling at list and discount. It would, however, appear that on Nails, and especially Wire Nails, many Hardware men sell from the card and have therefore to advise their customers in regard to changes in card. In this the representative retailer undoubtedly makes a mistake, and he would serve his own interests by making a net price on each size and kind of Nails he carries. A change in the price at which he buys resulting from such a change in the card as has recently been made in Wire Nails would, of course, necessitate revised selling prices; but these new prices could be easily established without attempting to initiate the customer into the mysteries of the card, with its base and advances. This point is brought out in the following letters, and the principle enforced in them is worthy the consideration of our readers, not only as applied to the line of goods in question, but as generally applicable to their business:

CANANDAIGUA, N. Y.—We have had no such difficulty as depicted in the article "How It Looks in the Country," but perhaps it is because we have avoided calling the customers' attention to the fact that the base price included only one size and that one rarely called for. Our practice is to find out what the customer wants and net him a price or use a card of our own, but that would not satisfy a customer of an inquiring turn of mind and would probably lead to results expressed in your article. Personally we like the principle on which the card is made, as it will result in reducing stock in a great measure to standard sizes, and simplifies the price in doing away with the discounts. At the same time, we protest against the one size of 6cd for base. There is no business man who believes there is any considerable difference in cost of the first four or five sizes on the card, or that a customer is not entitled on the base price named to him to some sizes that he is likely to want in building a house or barn. We can understand but one reason for it. The makers of the Nail card manufacture all sizes, and to meet the competition and punish the Tack-makers and others who only make small sizes and often undersell them, they reduce the price on them and increase the cost of large sizes. We would consider the card all right and helpful to the trade if the base included sizes enough not to occasion argument with a customer.

PEEKSKILL, N. Y.—I have no trouble with the new list, as I always give carpenters and all other customers the price of each size, thereby avoiding any possible misunderstanding. As soon as a new list comes out I look it over and make a list of net prices, tack it up where my clerks can have easy access to it and tell them to sell by that list when the Nails are wanted by the keg. I make another list in the same manner for Nails that are retailed.

RUSHVILLE, IND.—If the retail trade would desist from posting the purchaser of each pound of Nails as to cost, leave his competitor alone, run his business to a profit, pay his bills promptly and take advantage of his discounts and eat well-cooked food, the country would be better off. Tell kickers and Hardware men generally to keep their lists, discount sheets, *The Iron Age*, and private correspondence off the front show-case, and not be so jealous of their competitors selling an occasional bill, and spend more of their evenings with their own wives and children, and come solidly to the conclusion that their neighbor is just as likely to hold four aces as they are, and all will go well.

LEADVILLE, COL.—We have read with a great deal of amusement and interest the commotion "How It Looks in the Country" has caused among certain retailers. We agree with some of your correspondents, who state that they do not use base price at all, but get specifications as to size before quoting. We think that some merchants make a grave mistake in educating customers as to base price, list and discount, and believe the only way to

do is to always quote net prices and keep from your trade the idea that goods are bought and sold on base list and discount. Our trade at present is largely in list goods, and if customer asks price—on, say, 200 feet 10-inch 4-ply Rubber Belt—we quote him net price, instead of informing him that we will sell him at 60 or 65 per cent. discount, as the case may be. By this arrangement, if he accepts our offer he takes Belt and goes away satisfied. Suppose next day he wants, say, 25 feet 1 1/4-inch 2-ply. We quote him net price on this, and, of course, do not give him as close price on this small amount as on the larger, and if he had been quoted discount on the 10-inch Belt he would expect same discount to apply on the 1 1/4-inch

KENT, OHIO.—It is our custom to say very little about common base, and thus avoid lengthy explanations in which business information is given to the customer, who would invariably use it to the retailer's disadvantage in the future.

### Exports.

PER SHIP NEBO, JULY 24, 1889, FOR SYDNEY, N. S. W.

By *Ilsey, Doubleday & Co.*—150 dozen Axe Handles, 1 case Fire-Arms, 1 gross Barometers, 10 gross Hardware, 112 pounds Glue, 1 box Stencils.

By *Arnold, Cheney & Co.*—4 cases Wringers, 30 cases Axes, 3 cases Saws, 33 cases Handles, 9 cases Hardware, 2 cases Saddlery, 3 cases Axes, 8 bundles Blacking, 3 cases Saddlery, 80,850 pieces Roofing-Slate.

By *Arkell & Douglas.*—250 boxes Clothes-Pins, 6 crates Blacking, 1 Washing-Machine, 11 boxes Carriages, 1 case Handles, 4 cases Axes, 1 case Castings, 60 dozen Handles, 1 case Tire-Upsetters, 5 cases Pumps, 3 cases Hardware, 11 packages Blacking, 17 packages Hardware, 100 boxes Clothes-Pins, 146 cases Edge Tools, 102 cases Handles, 16 cases Trucks, 24 cases Scales, 52 packages Hardware, 30 cases Axes, 11 crates Stoves, 25 cases Handles, 6 crates Refrigerators, 32 packages Hardware, 17 cases Handles, 35 boxes Axes, 28 packages Hardware, 5000 Cartridges, 1 dozen Guns.

By *W. H. Crossman & Bro.*—24 dozen Hatchets, 89 pounds Washers, 100 gross Nutmeg-Graters, 10 dozen Stencils, 2 gross Lemon-Squeezers, 1 dozen Shellers, 1 case Pump Parts, 13 cases Hardware, 18 crates Carriage-Ware, 42 bundles Carriage-Ware, 15 gross Fruit-Jars, 35 dozen Brushes, 50 Clocks, 21 dozen Razor-Strops, 6 dozen Saw-Sets, 50 dozen Axes, 6 gross Shade-Roller Parts, 1 dozen Corn-Shellers, 1 dozen Carabines, 175 gross Wicks, 14 cases Carriage-Ware, 23 bundles Carriage-Ware, 1 Tire-Bender, 50 gross Lemon-Squeezers, 5 cases Hardware, 20 dozen Handles, 8 1/2 dozen Cages, 24 dozen Burners, 500 pounds Nails, 2 cases Hardware, 246 dozen Fruit-Jars, 3 dozen Carpet-Sweepers, 39 dozen Axes, 50 dozen Polish, 3 dozen Lemon-Squeezers, 5 crates Churns, 18 cases Store Trucks, 16 cases Hardware, 5 gross Axle-Grease, 2 dozen Hay-Knives, 1 gross Shade-Rollers, 6 dozen Spades, 24 dozen Burners, 3 nests Tubs, 18 Carriages, 4 Chaff-Cutters, 4 boxes Lamp Goods, 21 dozen Axes, 4 Hatchets, 10 cases, 61 bundles Carriage-Ware, 13 gross Fruit Jars, 16 Guns, 30 sets Tools, 10,000 Cartridges, 60,000 Primers, 4 Stoves, 9 cases Hardware.

PER BRIG AMERICUS, JULY 31, 1889, FOR CAPE TOWN, SOUTH AFRICA.

By *Coombs, Crosby & Eddy.*—525 Handles, 6 Saws, 12 dozen Hay-Forks, 4 cases Slates, 65 packages Wagon-Ware, 8 dozen Edge Tools, 6 dozen Tin-Ware, 1 dozen Meat-Cutters, 9 Churns, 8 dozen Edge Tools, 3 gross Axle-Grease, 4 cases Tools, 1 dozen Meat-Cutters, 3 dozen Saws, 3 dozen Hardware, 42 dozen Handles, 25 sets Hubs, 16 dozen Rat-Traps, 3 cases Meat-Cutters, 1 dozen Coffee-Mills, 4 dozen Tools, 6 cases Carriage-Ware, 84 sets Rims, 1/2 dozen Shafts, 3 kegs Nails, 7 1/2 gross Axle-Grease, 1 1/2 gross Axle-Grease.

By *J. Moore's Sons*—1 Cultivator, 1 Corn-Planter.

By *Boston and Lockport Block Company.*—2 casks Blocks.

By *R. W. Forbes & Son.*—9 cases Handles, 1 case Hardware.

PER BARK TERESA COSULICK, JULY 30, 1889, FOR WELLINGTON, NEW ZEALAND.

By *Plumb, Burdick & Barnard.*—1860 pounds Iron Bolts.

By *Boston & Lockport Block Company.*—2 casks, 1 barrel Blocks.

By *Collins & Co.*—10 dozen Edge Tools.

By *Nevins & Haviland.*—12 boxes Shade-Rollers.

By *Singer Mfg. Company.*—824 cases Sewing-Machines.

By *W. Lunham.*—4 cases Axes.

By *Chas. B. Seabury.*—3 packages Farm Machinery.

By *F. B. Wheeler & Co.*—9 Lawn-Mowers, 7 1/2 dozen Rakes, 1 case Hardware, 1 case Brush-Ware.

By *A. Field & Co.*—7 crates Stove-Ware, 12 packages Stove-Ware.

By *Coombs, Crosby & Eddy.*—24 dozen Axe-Handles, 3 dozen Wrenches, 2 dozen Grindstone Fixtures, 9 dozen Hammers, 12 dozen Axes.

By *Arkell & Douglas.*—3 crates Pumps, 7 cases Fruit-Jars, 16 cases Ranges, 16 packages Hardware, 5 cases Fruit-Jars, 5 cases Hardware, 2 cases Springs, 6 bundles Wash-Boards, 9 boxes Edge-Tools, 2 cases Handles, 1 cask Pumps, 3 boxes Hardware.

By *W. H. Crossman & Bro.*—1/2 dozen Lawn-Mowers, 3 dozen Axes, 56 Handles, 1 dozen Lemon-Squeezers, 4 dozen Bush-Hooks, 4 dozen Hammers, 9 dozen Traps, 2 dozen Egg-Beaters, 1/2 dozen Air-Guns, &c., 1 case Carabines and Revolvers, 10,500 Cartridges, 2 dozen Apple-Parers, 3 Rifles, 8 dozen Traps, 1/2 dozen Choppers, 10 cases Hardware, 1 dozen Parers, 5 gross Lead-Pencils, 3 dozen Grindstone Fixtures, 12 dozen Chimneys, 2 dozen Wringers, 7800 pounds Axle-Grease, 20 dozen Axes, 27 Horse-Collars, 3 cases Hardware.

By *H. W. Peabody & Co.*—6 bundles Carriage-Ware, 12 dozen Forks, 6 cases Edge-Tools, 107 cases Edge-Tools, 5 packages Pumps, 7 cases Hardware, 1 case Agricultural Implements, 52 dozen Handles, 2 packages Churns, 480 dozen Handles, 1200 pounds Nails, 14 packages Carriage-Ware, 24 dozen Shade-Rollers, 22,400 pounds Barb-Wire, 1 Plow, 188 packages Agricultural Machinery, 5 crates Churns.

By *R. W. Forbes & Son.*—11,282 pounds Horse Nails, 50 cases Axes, 11 cases Hardware, 2 cases Wringers, 400 dozen Axe-Handles, 10 dozen Axes, 5 gross Shade-Rollers, 9 crates Churns, 20 dozen Snaths, 12 dozen Spade-Handles, 24 dozen Wash-Boards, 1 case Hardware, 100 boxes Clothes-Pins, 20,000 Rivets, 5 dozen Bull Rings, 14 dozen Forks, 4 cases Carriage-Bolts, 3 packages Hardware, 54 dozen Axe-Handles, 6 gross Blacking, 288 dozen Axe-Handles, 13 crates Churns, 20 dozen Axes, 12 dozen Hammers, 200 boxes Clothes-Pins, 2 packages Toys, 3 cases Hardware, 20 dozen Snaths, 5 dozen Wringers, 2 gross Hammers, 54 dozen Tool-Handles, 12 dozen Rake-Handles, 100 boxes Clothes-Pins, 17 dozen Forks, 3 cases Kitchen-Ware, 12 dozen Wire Traps, 1 case Hoes, 6 cases Oil Stones, 7 packages Churns, 4 packages Har Ware, 6 packages Scales, 2 cases Meat-Choppers, 2 cases Hardware, 3 packages Pumps, 19 cases Toys, 1 package Hardware, 2 cases Kitchen-Ware, 7 packages Agricultural Implements, 2 packages Stencils, 5 boxes Tools, 6 packages Plated-Ware, 1 case Engine and Boiler, 20 packages Fruit-Jars, 3 boxes Nails, 8 packages Hardware, 1 box Nails, 6 cases Traps, 1 package Lawn-Pumps, 4 cases Fruit Jars, 1000 pounds Nails, 1 case Shotguns, 2 packages Hardware, 21 packages Stoves, 16 dozen Hatchets, 1 package Hardware, 2 dozen Axes, 2 packages Hardware, 1 case Hardware, 2 packages Wash-Boards, 1 ball Sash-Cord, 3 packages Pumps, 10 cases Sewing-Machines.

By *McLean Bros. & Rigg.*—3 dozen Handles, 16 bundles Carriage-Ware, 1 gross Apple-Parers, 3 dozen Lanterns, 3 dozen Pumps, 20,000 Cartridges, 2 1/2 dozen Wringers, 1/2 dozen Wire Mats, 21 dozen Axes, 7 dozen Mattocks, 6 packages Hardware, 2 dozen Bird-Cages, 1/2 dozen Mangles, 33 dozen Axes, 10 gross Lead-Pencils, 600 pounds Iron Nails, 1 Scale, 3 dozen Lanterns, 170 pounds Sash-Cord, 26 Stoves, 1 dozen Lamps, 16 packages Hardware, 700 pounds Nails, 18 dozen Hinges, 7 cases Hardware.

PER BARK COUNTY OF AYR, AUGUST 1, 1889, FOR BRISBANE, QUEENSLAND.

By *Meriden Britannia Company.*—30 boxes Plated-Ware.

By *Boston and Lockport Block Company.*—4200 pounds Blocks.

By *Goulds Mfg. Company.*—11 Pumps.

By *A. Field & Co.*—66 packages Stove-Ware.

By *Edward Miller & Co.*—82 packages Lamp Goods.

By *Collins & Co.*—32 doz n Edge Tools.

By *W. K. Freeman.*—3500 pounds Tackle-Blocks, 956 pounds Mast-Hoops.

By *Welsh & Lea.*—8 cases Iron Bolts.

By *G. Basanta.*—48 dozen Handles, 3 dozen Meat-Choppers, 12 dozen Wrenches, 15 Velocipedes, 29 packages Lamp-Ware, 3 dozen Twine-Boxes, 3 dozen Lemon-Squeezers.

By *R. W. Forbes & Son.*—138 dozen Handles, 3 cases Hardware, 3 dozen Washers, 3 Carriages, 4 cases Agricultural Implements.

By *Coombs, Crosby & Eddy.*—8 Refrigerators, 3 1/2 dozen Tin-Ware, 6 Wheelbarrows, 3 dozen Carpenters' Tools, 2 1/2 dozen Knives, 6 dozen Axes, 6 dozen Hatchets, 1/2 dozen

Wringers, 1/2 dozen Rat-Traps, 4 gross Hardware, 22 dozen Hardware, 13 Lawn-Mowers, 12 Step-Ladders, 9 dozen Agricultural Tool Handles, 6 Freezers, 6 Lawn-Sprinklers, 3 1/2 dozen Tools, 31 dozen Hardware, 2 dozen Apple-Parers, 7 dozen Hammocks and Parts, 3 1/2 dozen Agricultural Tools, 8 dozen Carpenters' Tools, 100 feet Hose, 33 pounds Castings.

By *A. S. Lascelles & Co.*—50 dozen Axes, 6 dozen Picks, 20 dozen Hatchets, 6 dozen Axes, 48 dozen Hatchets, 18 dozen Saws, 1 dozen Scales, 3 dozen Mattocks, 8 dozen Wrenches, 6 dozen Shovels, 60 dozen Shovels, 17 cases Handles, 6 dozen Lemon-Squeezers, 9 cases Nails, 1 dozen Saws, 5 packages Braces, 440 pounds Oil Stone, 4 cases Hardware, 3 cases Axle-Grease, 50 dozen Pencils, 1 case Velocipedes, 7 cases Cartridges, 1 case Meat-Cutters, 1 case Clocks, 3 cases Hardware, 18 packages Lamp-Ware.

By *H. W. Peabody & Co.*—500 dozen Handles, 18 cases Windmills, 40 cases Edge Tools, 1 case Hammers, 5 packages Carriage-Ware, 6 cases Hardware, 3 cases Carriages, 11 cases Axes, 12 cases Windmills, 4 packages Trucks, 5 cases Nails, 6 cases Blacking, 2 cases Toys, 7 cases Axes, 1 case Castings, 1 case Handles, 25 packages Stoves and Parts, 34 packages Choppers, 37 packages Agricultural Machinery, 62 packages Sewing-Machines, 10 cases Handles, 100 cases Tacks, 33 cases Scales, 2 cases Carriages, 1 case Castings, 1 case Carriage-Ware, 5 cases Wire Goods, 18 packages Edge Tools, 13 packages Lamp-Ware, 6 cases Hardware, 12 dozen Glue.

### A Clerk of Many Qualifications.

We notice with much satisfaction that business men generally find that it pays to give their office help good salaries, and that the services of the "scrub" are not desirable at any price. But occasionally we come across one of the old type who thinks that economy consists solely of getting something for less than it is worth. It was one of this class who is represented in the following bit of sarcasm, which we clip from the *Brooklyn Standard-Union*:

Recently an advertisement appeared in a New York paper to the effect that a certain dry goods house on Broadway required the services of a youth who understood short-hand and type-writing, for which they would pay the munificent sum of \$4 per week. Mr. S. Powell, a well-known member of Plymouth Church, replied to the generous offer as follows:

Gentlemen: In answer to your advertisement of this date for a youth familiar with short-hand and type-writer to assist with correspondence, salary \$4 per week, I would say that I know a youth who, besides these qualifications, possesses a critical knowledge of six modern languages, as well as drawing, painting, architecture, telegraphy (land and submarine), can play a snare-drum, teach roller-skating, is a promising light-weight scrapper, in religion a strict Calvinist, in deportment a Chesterfield, and is seldom in liquor.

This lad is anxious to work for your firm for \$3 per week, for the reason (as he asserts) that in case you should fail at any time to pay him, he will not lose so much; so he will not accept your too liberal offer of \$4.

I have suggested to him that in case he should accept this latter and larger sum, the possession of so large a sum of money every week might prove a temptation for people to rob him, and perhaps lead him into dissipated ways.

In this he concurs with me. He is perfectly willing to scrub out the store, hustle building material around the yard, lick postage-stamps and run on errands when not engaged in shorthand writing, as he believes these to form a part of the stenographer's duties.

Should he come, will you please discharge your janitor and one teamster, and allow him to fill their places in his leisure hours? He would like this.

Meet me at the entrance of Calvary Cemetery at 12 o'clock to-night, and I will introduce you to this youth, when you can tie a rope around his neck and drag him to your place of business.

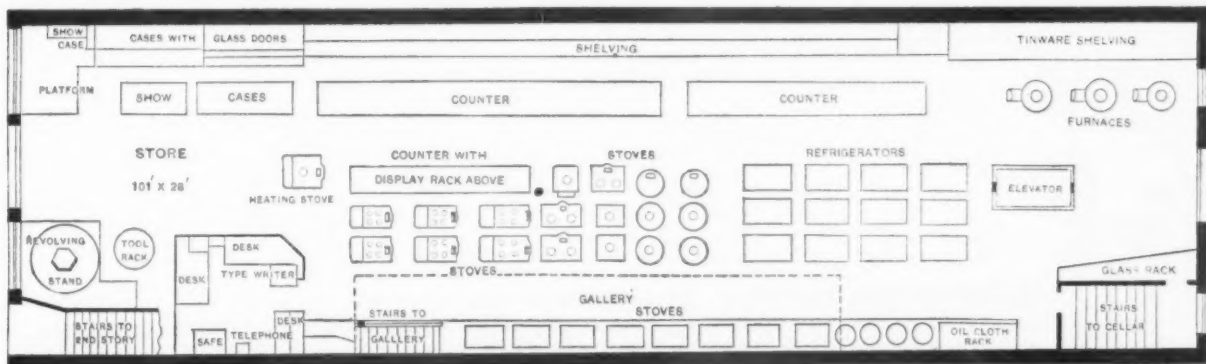


### Arrangement of Stores.

In order to fully meet the exacting requirements of their large and rapidly-growing business the firm of Charles F. Bock & Son have recently completed a new store building, located at No. 18 West Main

the revolving stand, placed just at the right of the doors and in front of one of the show-windows. This stand is designed for exhibiting small tools of various kinds, and is shown in Fig. 373 of the cuts. The base is 6 feet in diameter, and rising from the center is a hexagonal pyramid 4 feet

the firm designate as their house-furnishing table. This is located toward the front of the room just back of the stove used for heating the store and is partially shown in Fig. 374 of the engravings. The cut so clearly shows the general arrangement and plan of construction that



Arrangement of Stores.—Fig. 372.—First Floor Plan of Store of Charles F. Bock & Son, Battle Creek, Mich.

street, Battle Creek, Mich. The firm are composed of Charles F. Bock and his son Frank F. Mr Bock, Sr., began his career in the hardware business in 1855, with Pratt & Co., of Buffalo, N. Y. In 1861

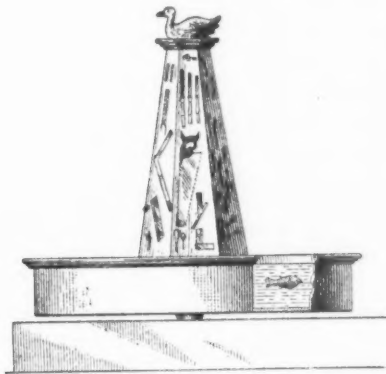


Fig. 373.—General View of Revolving Stand.

he went to Battle Creek, where he has since been actively engaged in business, first of the firm of Bock, Arnold & Co., then of Bock & Peters, and for the past five years associated with his son under the style given above. The firm have built up a large trade and carry in stock a good assortment of builders' supplies, stoves, furnaces and house-furnishing goods.

The store, the first-floor plan of which is shown in Fig. 372 of the accompanying il-

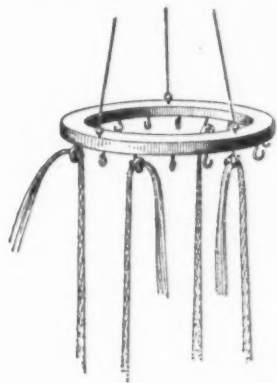


Fig. 375.—Device for Supporting Horse-Whips.

lustrations, is 28 x 101 feet between walls. It is an imposing three-story structure, bearing over the front doors the inscription, "The House-Keepers' Palace."

Entering through the double glass doors, the first object that strikes the attention is

in height. This floats in a galvanized-iron pan filled with water, and is revolved by means of heavy weights suspended in the basement. It requires winding once every four or five hours. This stand is one of the most attractive features of the establishment, and is considered by the firm a very popular way of displaying all kinds of goods. The tool-rack indicated in Fig. 372 of the cuts is designed for showing all kinds of steel goods, such as forks, rakes, &c. Just beyond the stand and at the right is the office. Beyond this is the

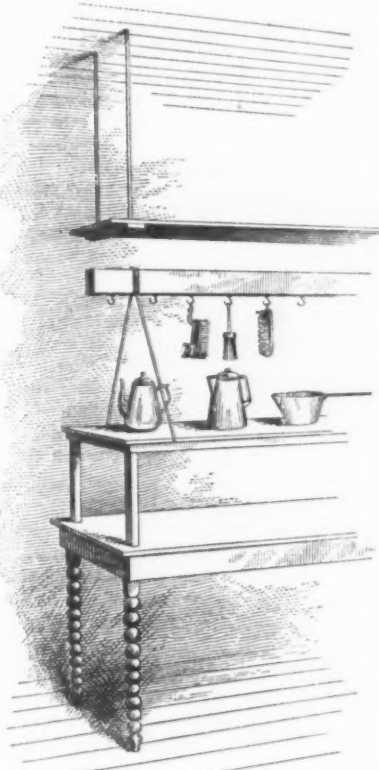


Fig. 374.—Counter with Display Rack and Hanging Shelf Above.

gallery used for wood and willow ware, under which are stored cook stoves of various descriptions. Toward the rear of the store is found the oil-cloth rack, while beyond are the stairs leading to the cellar and a rack for keeping glass. The space in the center is utilized for the display of cook stoves, ranges and refrigerators, the latter being placed convenient to the elevator. One of the features of interest to those who are engaged in the retail business is the combination counter and display-rack, with hanging-shelf above, which

other details are unnecessary in this connection. The left side of the store is devoted to counters and shelving for the display of tin-ware, light hardware, &c. Suspended from the ceiling are numerous devices for goods which can be conveniently displayed thereon. A whip-rack is shown in Fig. 375 of the cuts, and is seen to consist of a ring having on its under side a number of screw-hooks which support the tips of the whips. The store is fitted with electric lights and is finished in a very neat and attractive manner. In the rear is located the tin-shop, which consists of an apartment 22 x 30 feet in size. The firm state that while their store may not be finished any more elaborately than many others, it is roomy, conveniently arranged, and particular care is taken to keep it clean, neat and inviting at all times.

### Stove-Store Signs.

A correspondent sends us the following hint, which some of our readers may find useful:

Most stores are so built that the top of the upper cornice can be used for a sign to inform the passers-by that stoves



Letter for Use in Cornice Signs.

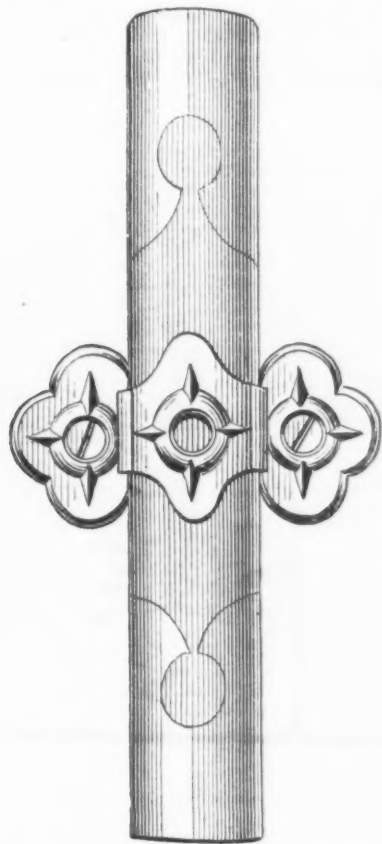
and hardware are for sale below. The ordinary board sign is sometimes used in this position, but unless it is securely fastened there is danger that it may be blown off by the wind, and its weight is such that much damage might result in case such an accident should occur. A strong and attractive style of letter can be made from round pipe, as shown in the illustration by the letter T, which can be made by the use of two two-pieced elbows and two T-joints. If the word "stoves" is required, the S can be made from six three-pieced elbows and the O from four. The V would require a special angle for the base. These letters can be easily attached to the front of the upper cornice, and secured by soldering at the bottom or any convenient means, the tops being held by iron rods or braces. The letters can be painted any color desired, or if made of bright tin without paint they would be very attractive.





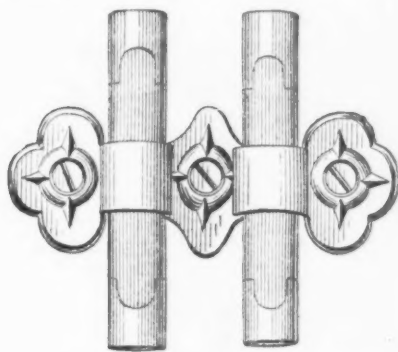
**The McLean Patent Tacks.**

Tacks of novel construction for supporting lead pipes are being manufactured and offered to the trade by the McLean Mfg.



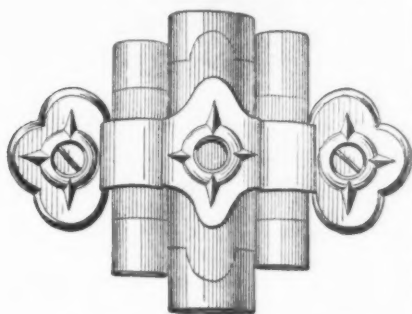
*The McLean Patent Tacks.—Fig. 1.—Supporting One Pipe.*

Company, Rockville, Conn. Three views of these tacks are shown in the cuts presented herewith. A special feature of these



*Fig. 2.—Supporting Two Pipes.*

tacks is that they can be used without any soldering, whereas in the old style they had to be soldered at the edges along the pipes.



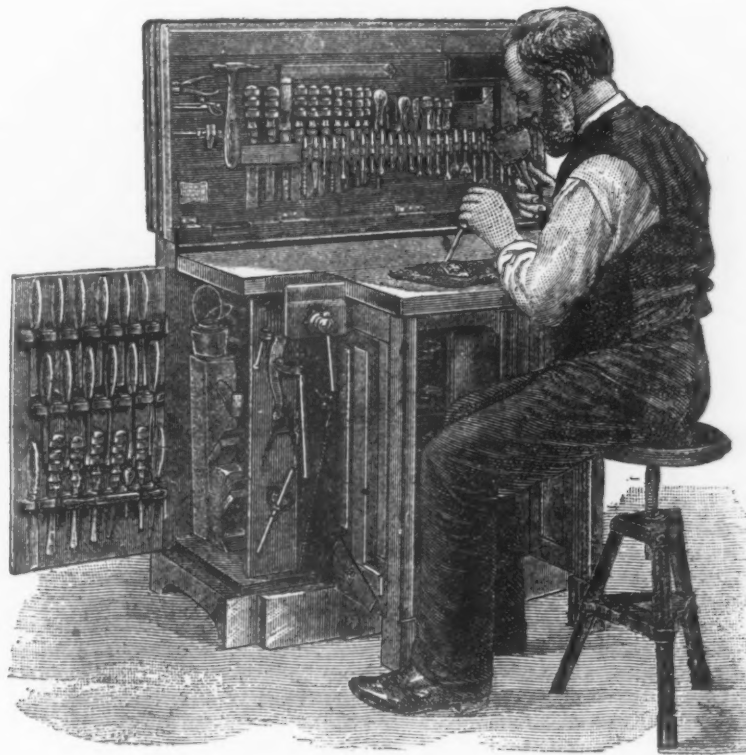
*Fig. 3.—Supporting Three Pipes.*

Furthermore, only two screws are required in the tacks for single pipes, in place of four screws in the older styles. In the

middle it will be noticed is a small opening, where in case solder has to be used a few drops may be inserted, or where the risers from the water-closet come in contact with the pipe the aperture can be filled with a rubber knob to act as a cushion. It is stated that they can be applied with very little labor and by any unskilled person. In Fig. 2 the tack is shown supporting two pipes, while in Fig. 3 the same tack bent to a different position holds three pipes. They are manufactured in all sizes from  $\frac{3}{8}$  to 2 inches, inclusive.

**Combination Tool-Cabinet.**

Our readers will remember that some months ago we published in these columns an illustrated description of a work-bench and tool-cabinet which was being introduced to the English trade by R. Melhuish & Sons, of Fetter Lane, London, England. Since that time this firm have made still further improvements in their cabinet tool-chest, and are now putting upon the market a form of cabinet which is shown in general view in the illustration. The improvement will be found in the table, formed by pulling forward the sliding pedestals and resting upon the top of them a carving-board, all of which is clearly indicated in the cut. This attachment presents facilities for drawing and painting, and, in fact, may be used for a variety of purposes. It is possible that an article of this description may not be for sale in the general market in this country, but we have no doubt the ingenious mechanic, possessing a reasonable amount of skill, will be able to fashion one of its



*Combination Tool-Cabinet.*

general description, which will be found excellently adapted to his requirements. The cabinet shown in the engraving is fitted with a very useful selection of tools, all arranged with a view to convenience and compactness.

The number of cotton mills now in the South, as compared with 1880, has doubled, while the number of spindles and looms has more than trebled, the tendency being to build mills of greater capacity than formerly. From 161 mills having 667,854

spindles and 14,323 looms in 1880, this industry has increased until there are now 355 mills, with 2,035,268 spindles and 45,001 looms.

**Toy Savings-Bank.**

The Shepard Hardware Company, Buffalo, N. Y., are putting on the market the



*Toy Savings-Bank.*

Santa Claus Toy Savings-Bank, which is represented in the accompanying illustration. It is made wholly of iron, highly

finished in brilliant colors. The coin is placed in the hand of Santa Claus, when by pressure on a thumb-piece not shown in the cut but immediately behind the chimney it is deposited therein. An ingenious arrangement below the slot in the chimney prevents the coin from being shaken out. By unscrewing a piece at the bottom the contents of the bank may be removed when desired. The bank is 6 inches high and 4 inches wide, and is intended to retail for 50 cents.

### Screw-Nail.

Screw-nails have been made with peculiar threads intended to facilitate the advance of a screw into the wood, and designed to be drawn from the wood like ordinary screws by turning, but their cost of manufacture prevented their wide adoption. In order to secure a good hold of a screw or nail in wood it is absolutely essential that the fibers of the wood should

into one of which, Fig. 1, a common flat-headed wood screw had been driven, while in the second a common screw had been driven two-thirds of its length with a hammer and then forced home with a screw-driver. These show the effect upon the wood of inserting a screw with a hammer, the tearing away of the fibers being clearly brought out. The third illustration shows a new screw-nail which has been recently patented by the American

plate or key is made of steel, while the spring is made from the best spring brass wire to prevent rusting. The simplicity, durability and ease of operation are points in regard to the bolt which are emphasized by the manufacturers. It is made in sizes from  $\frac{3}{8}$  x  $1\frac{1}{2}$  inches to 1 x 8 inches.

The large erecting and machine shops of the Huntingdon Mfg. Company, at Huntingdon, Pa., together with all the

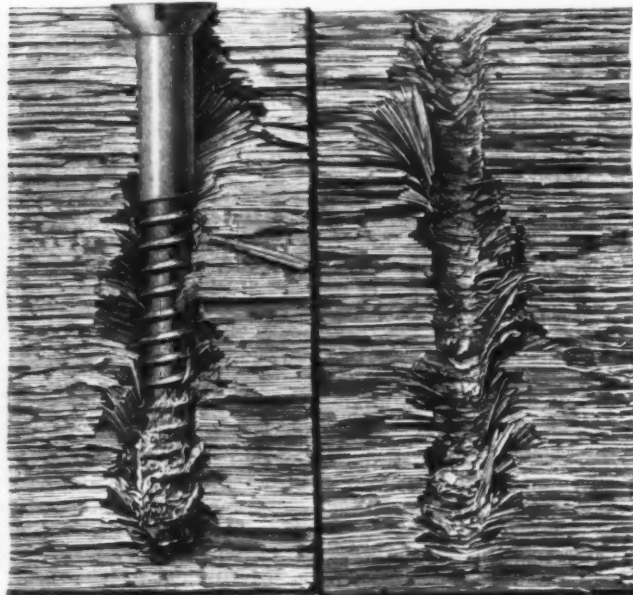


Fig. 1.—Common Wood-Screw Driven with Hammer.

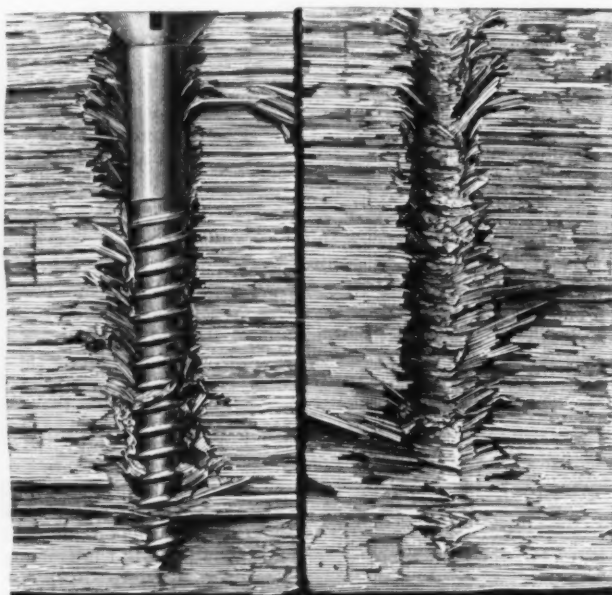


Fig. 2.—Common Wood-Screw Driven in Two-Thirds with Hammer.

be as little broken up as possible by the entrance of the screw or nail. In driving a screw of the ordinary type into wood with a hammer the fibers are so broken up by the screw-threads that the holding capacity of the thread is greatly reduced, and even where threads of steep pitch are cut into the waste of material and reduced strength counterbalance to a great

Screw Company, of Providence, R. I. This screw has the ability to form a cavity which, as to the strain upon it and its withdrawal, acts like a nut to a screw. The walls of this cavity are made up of the compressed fibers of the wood instead of disintegrated fibers, which result from driving ordinarily. The form of the threads of this screw and its four-sided point are plainly shown in the right-hand view, Fig. 3. These screws are made by special machinery designed for the purpose by the American Screw Company, and which forms the screw by swaging and rolling. This screw can be forced into wood by the blow of a hammer, makes its own nut as it descends into the wood into which it is driven, and may be withdrawn from the wood by turning with a screw-driver in the ordinary way. These screw-nails will be sold at a price considerably less than that charged for the ordinary screws.

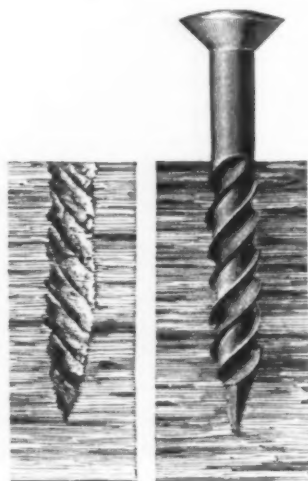


Fig. 3.—New Screw-Nail.

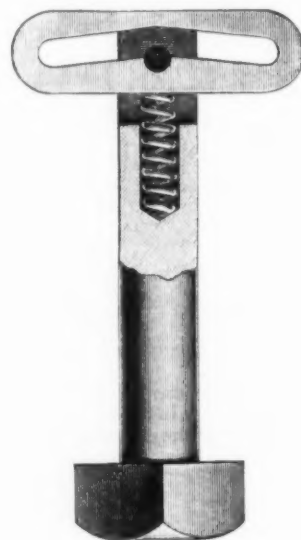
extent the holding capacity due to the spirally-formed threads. A nail or screw forces its way into the wood, and its holding power depends more directly upon the shape and condition of the walls of the cavity formed by its entrance than it does upon the tensile strength of the metal itself, which is generally more than sufficient to resist any direct strain brought upon it.

The accompanying engravings are made from photographs of two blocks of wood

### Wright's Patent Fastening Device.

The Wright Mfg. Company, 139 and 141 Master street, Philadelphia, Pa., are manufacturing this practical and ingenious article, which is represented in the accompanying engraving. This bolt is especially adapted to farmers' use on agricultural implements of all kinds, such as plows, harrows, heavy wagons, &c., as well as for railroad work of all kinds. The manufacturers refer to the fact that there has long been felt a want of a practical and durable loose bolt that would do away with the old-style split key, which is a source of constant annoyance to those who are compelled to use it. This bolt may be put in place or removed instantly without the use of tools of any kind. The device consists of a slotted retaining-plate in connection with a spiral spring. The illustration will indicate the mode of its construction. The movable retaining-

valuable machinery, 17 new cars and 25 tool-chests were totally destroyed by fire last week. The foundry, planing-mill and blacksmith shops were saved. About 250 men are thrown out of employment. Loss, \$43,000; insurance, \$34,000,



Wright's Patent Fastening Device.

divided among 24 companies. The company have large car contracts and will rebuild at once.

The Freight Committee of the Central Traffic Association, at Chicago, decided that, beginning September 1, there shall be an all-round rise in iron and steel rates. The exact advances are left to the Joint Committee of the Central Traffic and Trunk lines.



**Improved Roofing Double-Seamer.**

The accompanying engravings represent the general appearance and sections of an improved tool for forming the standing

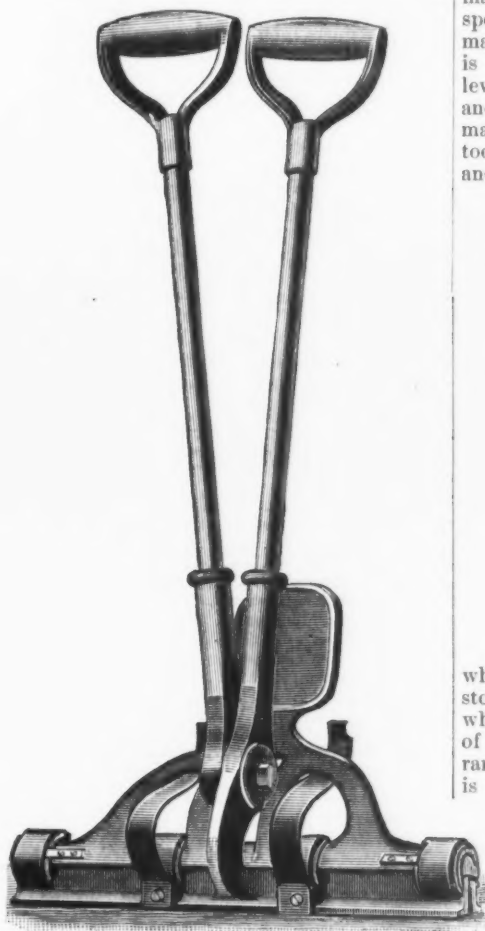


Fig. 1.—General Appearance of Buckman's Improved Roofing Double-Seamer.

seams in tin roofs which is being introduced by P. B. Calvert & Co., 68 North

the general features of which are well known to tin roofers in general. The first bend in forming a seam is made by clamping the tongs by bringing the handles together. The second bend is made by the foot-lever. Among the special advantages for which claims are made we note the following: The seam is completed as the work progresses the leverage of the tongs, both for the first and second bend, is so great that no malleting is required; the action of the tool is such as to be easy on the tin, and a round-topped seam is formed

which is an advantage where brash stock happens to be employed, but which is also important in the matter of the adhesion of paint; and the arrangement of parts is such that less labor is required to operate these seamers than others. Two seamers constitute a set, the only difference between the two tools being the height of the jaw. The ordinary sets supplied are 1 inch and 1½ inch respectively, although other sizes can be supplied on demand. The seamer here shown, we are informed, is the result of careful inquiry, much experiment and an earnest effort to meet the requirements of the trade.

Mr. Buckman, the inventor of this tool, is known to a very large circle in the trade

**Indurated-Fiber Bath-Tub.**

There appears to be no limit to the uses to which indurated fiber is adapted. Among the latest applications of this valuable material are indurated bath-tubs, manufactured by the Oswego Indurated Fibre Company, Oswego, N. Y. The general appearance of the tub is shown in the above illustration. The manufacturers have been experimenting some years in this line, with the idea of producing an article which should embody as many desirable features as possible. The material



Indurated-Fiber Bath-Tub.

of pure fiber is molded in one piece under heavy pressure and is thus without joint or seam, even the rim being a part of the body, and leaving no crevice where dirt might collect. Mention is made of the fact that the fiber is a non-conductor of heat and thus retains the warmth in the water longer than would be possible in metal; and, furthermore, it is adapted for electric baths. The material is the same as that used in other indurated fiber ware. The outside of the tub, in baking, is given a mahogany or rosewood finish, unless specially made to correspond with the wood-work of the room, while the rim is finished as wood, or white enamel if desired. The inner surface of the tub is lined with imported white enamel specially prepared for this use, but the enamel may be tinted if preferred. It also is subjected to a high temperature and thoroughly baked into the tub, making, it is said, a hard, lasting, durable, impervious lining that can be cleaned without scouring. The manufacturers further direct attention to the low price of the tub. Fittings, including standards, wastes and overflow, are specially designed for the tub. As will be noticed, it is open and raised from the floor, so that it can be easily kept free from dirt. It is specially well adapted to country-houses, since it only weighs 50 pounds and is easily portable and can be moved from room to room. The Western agent of these goods is G. W. Best, No. 45 Wabash avenue, Chicago, Ill., the agents for the New England States being Dalton & Ingersoll, No. 171 High street, Boston, Mass., while for New York City and vicinity the goods are handled by Henry Huber & Co., 81 Beekman street.

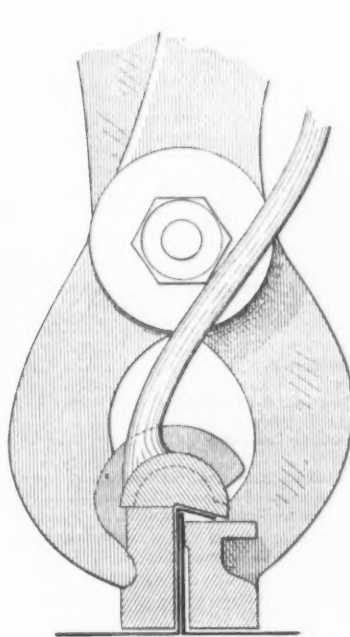


Fig. 2.—Cross-Section, Showing Position of Parts for First Turn.

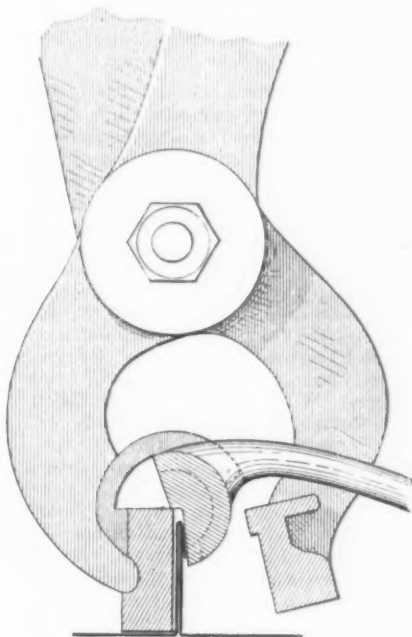


Fig. 3.—Cross-Section, Showing Position of Parts for the Seam Closed.

Second street, Philadelphia. It is known in the trade as Buckman's Improved Roofing Double-Seamer, and it is of a type

as being a practical man and one who has quite recently been giving attention to various labor-saving devices.

The sinking of the Harlem Railroad tracks within the city limits from Harlem River to Woodlawn causes a general disruption of the surface of the streets in that section. At all the main crossings in the annexed district bridges will be erected. The deepest depression is about 20 feet, at 158th street. Elsewhere, between Melrose and Tremont, the grade is much above the natural level. The four tracks will cover a space 54 feet wide, so that there will be ample room to develop the new system so as to separate local and through traffic. The work will cost about \$2,000,000 and will be finished early next year.

## Recent Legal Decisions.

## MINE—RIGHT TO USE OF SURFACE.

W. bought all the coal and other minerals under a certain tract of land, and the deed to him expressly granted the coal and other minerals. G. subsequently bought the surface of the tract, and in his deed it was declared that the coal and other minerals had already been granted away. In the deed to W. there was a special grant of certain timber and water privileges and a right of way. W. was sued in ejectment by G. for the possession of the surface, and in the action W. claimed the use of 3 acres thereof to enable him to properly conduct the mining of the coal in his tract. Upon the surface of 3 acres W. had erected five two-story frame miners' houses, four log cabins for the use of his employees, an air-shaft for the smoke and for ventilation, a powder-house for keeping the powder used for blasting, a blacksmith shop, and a store-house for furnishing the miners with supplies, and he, W., claimed the use of this portion of the surface for the purpose of erecting and operating coke-ovens to turn the coal into coke. G. had a judgment, and W. took the case—*Williams vs. Gibson*—to the Supreme Court of Alabama, where a reversal was had. Judge Somerville, in the opinion, said: "1. The express grant of all the minerals or mineral rights in a tract of land is, by necessary implication, the grant, also, of the rights to work them, unless the grant itself repels this construction. This involves the incidental right to penetrate the surface of the soil for the minerals, and to use such means and processes for the purpose of mining and removing them as may be reasonably necessary, in the light of modern inventions and of the improvement in the arts and sciences, but without injury to the support for the surface or superincumbent soil in its natural state. 2. It is contended that this incidental right to work the mines on the land is limited by the special grant of certain timber and water privileges, and of the right of way. It is obvious that without the right of surface occupation to some extent the grant in question is rendered nugatory. The principle is well settled that one who has the exclusive right to mine coal upon a tract of land has the right of possession even as against the owner of the soil, so far as is reasonably necessary to carry on his mining operations. To construe away this right would be to construe away the grant itself, which cannot be enjoyed without it. It is our opinion that the enumeration of these special privileges was not intended to exclude another which was absolutely necessary to the very life of the grant itself. 3. There is no right, however, to the use of the surface of the land to erect thereon coke-ovens to turn the coal into coke. An owner of minerals has only the right to mine and convey. He cannot use the surface or any of the materials of the land for changing the character of the mineral to which he is entitled, as for converting coal into coke, clay into bricks, or for smelting the metallic ores, much less for the purpose of manufacture. 4. Which, if any, or all of the buildings or improvements on these 3 acres (no coke-ovens having been put up) are reasonably necessary for the profitable and beneficial working of the mines is a question of fact to be determined by the jury. It may be that land conveniently adjacent might be had for the miners' houses, the cabins and the stores, or the contrary may be true; and it may be that there was no need for the stores, there being stores near by where goods were sold at fair prices. These are questions of necessity to be determined from the surround-

ing circumstances, and by the jury alone. The judgment must be reversed and a new trial granted."

## PERSONAL.

Jacob Schook, chief engineer of the American Iron and Steel Works of Jones & Laughlins, Limited, at Pittsburgh, sailed for Europe last week on a business and pleasure trip.

Among the engineers who crossed the Atlantic on the winning ship *City of New York*, of the Inman Line, were Prof. G. J. Alden, of Worcester, Mass.; M. A. Beck, of Chicago; Octave Chanute and ladies, Chicago; F. N. Daniels, of the Washburn & Moen Mfg. Company, Worcester; J. D. Hawkes, of the Michigan Southern Railroad; C. Kirchhoff, Jr., of New York; Henry McCormick the iron manufacturer, and family, of Harrisburg, Pa.; Maunsel White and E. A. Uehling, of the Bethlehem Iron Company, Bethlehem, Pa.; W. J. Karner, Francis H. Richards, the well-known designer of special machinery, of Hartford, Conn., and W. Wyman, of Wyman & Gordon, manufacturers of drop forgings, Worcester, Mass.

Thomas A. Edison, the inventor, has been very cordially received in England and in Paris, and is the recipient of special honors from the rulers of Europe.

John G. Carlisle, late Speaker of the House of Representatives, was given a grand reception at the Mexican capital on the 15th inst. by a committee of the Mexican Congress, as an expression of friendliness to the United States. He expressed an earnest desire for the continued prosperity of the Mexican Republic. "We do not want your territory," he said, "but we do want your trade with an easy interchange of products for our mutual benefit." These sentiments were cordially reciprocated.

Morgan & Brother, being desirous of withdrawing from the active management of the *Ironmonger*, the well-known leading English journal in its branch, have given an interest to Messrs. Freir, Wooten and Walker. W. E. Freir is widely known as the editor of the *Ironmonger*.

Howard H. Burden, of Troy, and Philip W. Moen, of the Washburn & Moen Mfg. Company, Worcester, Mass., sailed for Europe in the *Etruria* on Saturday.

On Tuesday night a banquet was given by members of the Engineers' Club, New York, to those of their wandering fellows who had returned from Europe, about 100 gentlemen sitting down to table. After disposing of an elaborate menu Vice-President James C. Bayles, in the absence of the president, James A. Burden, called upon a number of hosts and guests. Among the speakers were Henry R. Towne, J. T. Holloway, J. F. Lewis, W. H. Adams, W. H. Freeman, Commander Loring, Chief Engineer Gearing, W. Bogart, secretary of the American Society of Civil Engineers; W. A. Clarke, of the Union Bridge Company, and C. Kirchhoff, Jr., Chief Engineer Gearing, who is connected with the Inman and International Steamship Company, spoke in a very interesting and humorous manner of the possibilities in the future of quick ocean travel. Starting with the statement that the maximum in size of the steamships had been reached, since their draft would become too great to allow them to pass over the bars at the mouth of the harbors, he announced that in order to make the trip in five days the engine power must be raised to 40,000 horse-power, and that it would take 36 1000-horse-power locomotive boilers to provide the steam. The speech of the evening was made by Dr. R. W. Ray-

mond, who has long since achieved the fame of being *par excellence* the speaker of whom the American engineering profession can boast.

William Thaw, who died suddenly in Paris, last Saturday, was one of the best-known business men in Pittsburgh. As a railway official he was known throughout the country, having been one of the chief officers of the Pennsylvania Railroad ever since its organization. Deceased was very wealthy and exceedingly charitable. He was highly respected in the community, and his death is deeply regretted by all classes in Pittsburgh.

Hon. William Milnes, Jr., died on Wednesday, 14th inst., at Milnes, Va. He was born in England and was 61 years of age. He was elected to Congress in 1880 and served one term. He was proprietor of the Milnes Iron Works, and was one of the most prominent business men of that place.

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## CURRENT HARDWARE PRICES.

AUGUST 21, 1889.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers' name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

**Ammunition.**

Caps, Percussion, 1000—

Elcks & Goldmark's and Union Metallic Cartridge Co.	
E. L. Waterproof, 1-10's.....	34@35¢
E. B. Trimmed Edge, 1-10's.....	43@48¢
E. B. Grnd. Edge, Cent. Fire, 1-10's.....	46@47¢
Musket Waterproof, 1-10's.....	50¢
G. D.....	28¢
S. B. Genuine Imported.....	45¢
Eley's E. B.....	54¢ @ 55¢
Eley's D Waterproof, Central Fire.....	\$1.60

**Cartridges.**

Rim Fire Cartridges.....	50¢ & 52¢
Rim Fire Military.....	15¢ & 2¢
Cent. Fire, Pistol and Rifle.....	25¢ & 52¢
Cent. Fire, Military and Sporting.....	15¢ & 52¢
Blank Cartridges, except 22 and 32 cal., additional 10¢ on above discounts.	
Blank Cartridges, 22 cal., \$1.75.....	2¢
Blank Cartridges, 32 cal., \$3.50.....	2¢
Primed Shells and Bullets.....	15¢ & 52¢
B. B. Caps, Round Ball, \$1.75.....	2¢
B. B. Caps, Con. Ball, Swgd., \$2.00.....	2¢

**Primers.**

Berdan Primers, \$1.00.....	2¢
B. L. Caps (for Sturtevant Shells) \$1.00.....	45¢
All other Primers, \$1.20.....	2¢

**Shells.**

First quality, 4, 8, 10 and 12 gauge.....	25¢ & 10¢ & 2¢
First quality, 14, 16 and 20 gauge (\$10 list).....	30¢ & 10¢ & 2¢
Star, Club, Rival and Climax brands.....	20¢ & 10¢ & 2¢
Setbold's Comb. Shot Shells.....	15¢ & 2¢
Brass Shot Shells, 1st quality.....	60¢ & 2¢
Brass Shot Shells, Club, Rival, Climax.....	65¢ & 2¢
I. X. L., 10 and 12 gauge.....	30¢ & 10¢ & 2¢
"Special," 16 gauge.....	30¢ & 10¢ & 2¢
"Special," 10 and 12 gauge.....	40¢ & 10¢ & 2¢
Fowler's Pat.....	\$3.25

**Shells Loaded.**

Standard. List.....	40¢ & 10¢ & 40¢ & 10¢ & 10¢
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**Wads.**

U. M. C. & W. R. A.—B. E., 11 up, \$2.00.....	
U. M. C. & W. R. A.—B. E., 9x10, 2.30.....	
U. M. C. & W. R. A.—B. E., 7x8.....	2.60
U. M. C. & W. R. A.—P. E., 11 up, 3.10.....	
U. M. C. & W. R. A.—P. E., 9x10, 4.00.....	
U. M. C. & W. R. A.—P. E., 7x8.....	4.90
Eley's B. E., 11 up.....	1.75
Eley's P. E., 11 up.....	2.80

**Anvils.**

Eagle Anvils, 10¢.....	20¢ & 20¢ & 5¢
Peter Wright's.....	9¢ @ 9¢ & 4¢
Armitage's Mouse Hole.....	8¢ & 4¢
Armitage's Mouse Hole, Extra 11¢.....	11¢
Trenton.....	9¢ @ 9¢ & 4¢
Wilkinson's.....	9¢ @ 9¢ & 4¢
J. & Riley Carr. Pat. Solid.....	11¢ @ 11¢ & 4¢
Moore & Barnes Mfg. Co.....	33¢ & 4¢

**Anvil Vise and Drill.**

Millers Falls Co., \$18.00.....	20¢
Allen Anvil and Vise.....	25¢
Allen Anvil and Vise, \$3.00.....	40¢ & 10¢

**Apple Parers.**

Advance.....	10¢ doz \$4.75
Antrim Combination.....	10¢ doz 5.50
Baldwin.....	10¢ doz 5.25
Champion.....	10¢ doz 7.25
Dalry.....	10¢ doz 4.00
Eureka, 1888.....	each 17.00
Family Bay State.....	10¢ doz 12.00
Favorite.....	10¢ doz 5.00
Gem.....	10¢ doz 5.25
Gold Medal.....	10¢ doz 4.00
Ideal.....	10¢ doz 4.00
Improved Bay State.....	10¢ doz 30.00
Little Star.....	10¢ doz 4.50
Monarch.....	10¢ doz 13.50
New Lightning.....	10¢ doz 5.50
Oriole.....	10¢ doz 4.00
Penn.....	10¢ doz 4.00
Perfection.....	10¢ doz 4.00
Pomona.....	10¢ doz 4.00
Rocking Table.....	10¢ doz 6.00
Turntable.....	10¢ doz 4.50
Victor.....	10¢ doz 13.50
Waverly.....	10¢ doz 4.00
White Mountain.....	10¢ doz 4.00
72.....	10¢ doz 4.25
76.....	10¢ doz 5.75
78.....	10¢ doz 6.50

**Augers and Bits.**

Douglas Mfg. Co.....	
Wm. A. Ives & Co.....	
Humphreysville Mfg. Co.....	70¢
French, Swift & Co. (F. H. Beecher, Rockford Bit Company).....	
Cook's, Douglas Mfg. Co.....	55¢
Cook's, N. H. Copper Co. 50¢ & 10¢ & 50¢ & 10¢ & 55¢	
Ives' Circular Lip.....	60¢
Pat. Solid Head.....	30¢
C. E. Jennings & Co., No. 10, extension lip.....	40¢
C. E. Jennings & Co., No. 30.....	60¢
C. E. Jennings & Co., Auger Bits, 1/2 set, 32¢ quaters, No. 5, \$5; No. 30, \$3.50, 20¢	
Lewis' Patent Single Twist.....	45¢
Jennings' Augers and Bits.....	25¢
Imitation Jennings' Bits.....	90¢ & 90¢ & 5¢
Pugh's Black.....	20¢
Rockford, Jennings' Pattern.....	60¢
Car Bits.....	50¢ & 10¢ & 60¢
L. Hommedieu Car Bits.....	15¢ & 10¢
Forstner Pat. Auger Bits.....	10¢

**Hollow Augers.**

Ives'.....	33¢ @
French, Swift & Co.....	33¢ @ 10¢
Douglas.....	
Bonney's Adjustable, 1/2 doz \$48.....	40¢ & 10¢
Stearns.....	20¢ & 10¢
Ives' Expansive, each \$4.50.....	50¢ & 5¢
Universal Expansive, each \$4.50.....	20¢
Wood's.....	25¢ @ 25¢ & 10¢

**Expansive Bits.**

Clarke's small, \$18; large, \$26.....	35¢ @ 35¢ & 5¢
Ives' No. 4, 1/2 doz \$40.....	40¢
Swan's.....	40¢
Steer's, No. 1, \$20; No. 2, \$22.....	35¢
Stearns' No. 2, \$48.....	20¢

**Gimlet Bits.**

Common.....	1/2 gross \$2.75 @ \$3.25	
Diamond.....	1/2 doz \$1.10.....	25¢ & 10¢
Ree.....	25¢ @ 25¢ & 5¢	
Double Cut, Shepardson's.....	45¢ @ 45¢ & 10¢	
Double Cut, Ct. Valley Mfg. Co.....	30¢ & 10¢	
Double Cut, Hartwell's, 1/2 gross.....	\$5.25	
Double Cut, Douglas's.....	40¢ & 10¢	
Double Cut, Ives.....	60¢ @ 60¢ & 10¢	

**Bit Stock Drills.**

Morse Twist Drills.....	50¢ & 10¢ & 5¢
Standard.....	50¢ & 10¢ & 5¢
Cleveland.....	50¢ & 10¢ & 5¢
Syracuse, for metal.....	50¢ & 10¢
Syracuse, for wood (wood list).....	30¢ @ 30¢ & 5¢
Williams' or Holt's, for metal.....	50¢ & 10¢ & 5¢
Williams' or Holt's, for wood.....	40¢ & 10¢

**Ship Augers and Bits.**

L'Hommedieu's.....	15¢ & 10¢ @ 15¢ & 10¢ & 5¢
Watrous.....	15¢ & 10¢ @ 15¢ & 10¢ & 5¢
Snell's.....	15¢ & 10¢ @ 15¢ & 10¢ & 5¢
Snell's Ship Auger Patt'n Car Bits.....	15¢ & 10¢ @ 15¢ & 10¢ & 5¢

**Awl Hafts.**

Sewing, Brass Fer. 1/2 gr, \$3.50.....	45¢ & 10¢
Pat. Sewing, Short, \$1.00 1/2 doz.....	40¢ & 10¢
Pat. Sewing, Long.....	1/2 doz \$1.20
Pat. Peg, Plain Top, 1/2 gr \$10.00.....	45¢ & 10¢
Pat. Peg, Leather Top, 1/2 gr \$12.00.....	45¢ & 10¢

**Awls, Brad Sets, &c.**

Awls, Sewing, Common, 1/2 gr \$1.70, 35¢	
Awls, Should. Peg, 1/2 gr \$2.35, 40¢ @ 40¢ & 10¢	
Awls, Pat. Peg, 1/2 gr \$3.40, 40¢ @ 40¢ & 10¢	
Awls, Shouldered Brad, 2.70 1/2 gr.....	35¢
Awls, Handled Brad, \$7.50 1/2 gr.....	45¢
Awls, Handled Scratch 1/2 gr, \$7.50, 35¢ & 10¢	
Awls, Socket Scratch, 1/2 gr, \$1.50, 25¢ & 30¢	

**Awl and Tool Sets.**

Alken's Sets, Awls and Tools.....	
No. 20, 1/2 doz \$10.00.....	55¢ & 10¢
Fray's Adj. Tool Hds., Nos. 1, \$12; 2, \$18; 3, \$12; 4, \$9.....	25¢ @ 25¢ & 10¢
Miller's Falls Adj. Tool Hds.....	
Nos. 1, \$12; 2, \$18.....	25¢
Henry's Combination Haft.....	1/2 doz \$5.50
Brad Sets.....	
No. 42, \$10.50; No. 43, \$12.50, 70¢ & 10¢ & 5¢	
Stanley's Excelsior.....	
No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50.....	30¢ & 10¢

**Axes.****Makers' and Special Brands.**

First quality.....	1/2 doz \$6.00 @ \$6.50
Others.....	1/2 doz \$6.50 @ \$6.75

**Axle Grease.**

Fraser's.....	Keg 1/2 doz 4¢, Pail 1/2 doz 5¢
Fraser's, in boxes.....	1/2 gr \$0.50
Dixon's Everlasting, in bxs.....	1/2 doz 1¢
Dixon's Everlasting.....	\$1.20; 2 lb \$2.00
Lower grades, special brands.....	10¢ pails, ea. 85¢
	1/2 gr \$5.50 @ \$7.00

**Axles.**

No. 1.....	4¢ @ 4¢ & 5¢, No. 2 5¢ @ 5¢ & 5¢
Nos. 7 to 14.....	55¢ & 5¢
Nos. 15 to 18.....	47¢ & 5¢
Nos. 19 to 22.....	70¢
National Tubular Self-Oiling: Standard Farm (1 to 5) and Special Farm (A1 to A5).....	
Less than 10 sets.....	33¢ & 5¢
Over 10 sets.....	33¢ & 5¢

**Bag Holders.**

Sprengle's Pat.....	1/2 doz \$18.....	60¢
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**Balances.**

Balances—	
Spring Balances .....	50%
Common 24-lb ..... 1/2 doz \$1.50.....	50%
Chattillon's Spring Balances.....	50%
Chattillon's Circular Spring Balances.....	60%

**Bells.****Hand.**

Light Brass.....	70¢ & 10¢ @ 75¢
Extra Heavy.....	60¢ & 10¢
White Metal.....	60¢ & 10¢ & 10¢
Silver Chime.....	33¢ @ 33¢ & 10¢
Globe (Cone's Patent).....	25¢ @ 25¢ & 10¢ & 35¢

**Door.**

Gong, Abbe's.....	33¢ @ 33¢ & 10¢
Gong, Yankee.....	45¢ & 10¢
Gong, Barton's.....	40¢ @ 40¢ & 50¢
Crank, Taylor's.....	25¢ & 10¢
Crank Brooks.....	50¢ & 10¢ & 2¢
Crank, Cone's.....	10¢

Crank, Connel's.....	20¢ & 10¢
Lever, Sargent's.....	60¢ & 10¢
Lever, Taylor's Bronzed or Plated.....	net
Lever, Taylor's Japanned.....	25¢ & 10¢
Lever, R. E. M. Co.'s.....	50¢ & 10¢ & 2¢
Pull, Brook's.....	50¢ & 10¢ & 2¢
Pull, Western.....	25¢ & 10¢

**Coal.**

Common Wrought.....	60¢ & 10¢
Western.....	20¢ & 10¢
Western, Sargent's list.....	70¢ & 10¢
Kentucky, "Star".....	20¢ & 10¢
Kentucky, Sargent's list.....	70¢ & 10¢
Dodge, Genuine Kentucky.....	70¢ & 10¢
Texas Star.....	50¢ & 10¢ & 50¢ & 10¢ & 5¢
Call.....	40¢ @ 40¢ & 5¢
Farm Bells.....	1/2 doz 3¢ @ 3¢ & 4¢
Steel Alloy Church and School Bells.....	40¢

**Bellows.**

Blacksmiths'.....	60¢ @ 60¢ & 5¢
Molders'.....	40¢ @ 40¢ & 10¢
Hand Bellows.....	40¢ @ 40¢ & 50¢

**Belting, Rubber.**

Common Standard.....	70¢ & 10¢
Standard.....	70¢ & 70¢ & 5¢
Extra.....	60¢ & 50¢ @ 60¢ & 10¢
N. Y. B. & P. Co., Carbon.....	60¢ & 10¢ & 5¢
N. Y. B. & P. Co., Diamond.....	50¢ & 10¢

**Bench Stops.**

Morrill's.....	1/2 doz \$9, 50¢
Chickiss's.....	1/2 doz \$5, 10¢ 10¢ 10¢
Weston's, No. 1, \$10; No. 2, \$9.....	25¢ & 10¢ & 5¢
McGill's.....	1/2 doz \$3.....10¢

**Bits.**

Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.	
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**Bit Holders.**

Extension.....	1/2 doz \$15.00.....	40¢ @ 40¢ & 10¢
Ives.....	1/2 doz \$20.00.....	60¢ @ 60¢ & 10¢
Diagonal.....	1/2 doz \$24.00, 40¢	
Angular.....	1/2 doz \$24.00, 40¢ & 5¢	

**Blind Adjusters.**

Blind Adjusters—	
Domestic.....	1/2 doz \$3.00, 33 1/2%
Excelsior.....	1/2 doz \$10.00, 50¢ & 10¢ & 2¢
Washburn's Self-Locking...	20¢ @ 20¢ & 10%

**Blind Fasteners.**

Mackrell's, 1/2 doz, \$1.00.....	20¢@20¢&10¢
Van Sand's Screw Pat., \$15 1/2 gr.....	60¢&10¢
Van Sand's Old Pat., \$15.00 1/2 gr.....	55¢&10¢
Washburn's Old Pattern, 1/2 gr.....	80.00
Merriman's.....	new list
Austin & Eddy No. 2008, 1/2 gr.....	80.00
Security Gravity, 1/2 gr.....	80.00

**Blind Staples.**

Barbed, 1/2 in. and larger.....	1/2 m 7¢ @ 8¢
Barbed, 3/4 in.....	1/2 m 8¢ @ 9¢

**Blocks.**

Ordinary Tackle, list May 20, 1889.....	40¢ & 10¢ & 50¢
Cleveland Block Co., Mal. Iron.....	50¢
Moore's Novelty, Mal. Iron.....	50¢

**Bolts.**

Door and Shutter.....	
Cast Iron Barrel, Square, &c., 70¢ @ 70¢ & 10¢	
Cast Iron Shutter Bolts.....	70¢ @ 70¢ & 10¢
Cast Iron Chain (Sargent's list).....	65¢ & 10¢
Ives' Patent Door Bolts.....	60¢
Wrought Barrel.....	70¢ @ 70¢ & 10¢
Wrought Square.....	70¢ @ 70¢ & 10¢
Wrt Shutter, all Iron, Stanley's.....	60¢ & 10¢
Wrt Shutter, Brass Knob, ".....	40¢ & 10¢
Wrt Shutter, Sargent's list.....	60¢ & 10¢
Wrt Sunk Flush, Sargent's list.....	55¢ & 10¢
Wrt Sunk Flush, Stanley's list.....	50¢ & 10¢
Wrt B.K. Flush, Com'n ".....	55¢ & 10¢

**Carriage Machine, &c.**

Com. list June 10, '84.....	75¢ & 10¢ & 2¢
Genuine Eagle, list Oct., '84.....	75¢ & 10¢ & 80¢
Phila. pattern, list Oct. 7, '84.....	80¢ @ 80¢ & 10¢
R.B. & W., old list.....	70¢
Machine, according to size.....	80¢ @ 80¢ & 5¢
Bolt Ends, according to size.....	80¢ @ 80¢ & 5¢

**Tire.**

Common, list Feb. 28, '83.....	70¢
Port Chester Bolt and Nut Company.....	
Empire list Feb. 28, '83.....	70¢
Phila., list Oct. '84.....	82¢ & 5¢
Keystone, Philadel., list Oct. '84.....	80¢
Norway, Phila., list Oct. '84.....	75¢ & 10¢
American Screw Company.....	
Norway, Phila., list Oct. 16, '84.....	75¢ & 10¢
Eagle, Phila., list Oct. 16, '84.....	82¢ & 5¢
Phila., list Oct. 16, '84.....	80¢
Bay State, list Feb. 28, '83.....	70¢
R.B. & W., Philadel., list Oct. 16, '84.....	82¢ & 5¢

**Stove and Flow.**

Stove.....	65¢
Flow.....	60¢ & 5¢
R. B. & W., Flow.....	55¢

**Borax.**

.....	1/2 doz 9¢ @ 10¢ & 6¢
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**Boring Machines.**

Without Augers.	Upright.	Angular.	
Douglas.....	\$5.50	\$6.75	.....50%
Snell's, Rice's Pat.	5.50	6.75	.....40¢&10¢
Jennings.....	5.50	6.75	.....45¢&10¢
Other Machines...	2.35	2.75	.....net
Phillips' Patent with Augers.....	00	7.50	

**Cards**—  
Horse & Curry.....10&10&10&10&10  
Cotton.....10&10&10&10  
Wool.....10&10&10&10

**Carpet Stretchers**—  
Cast Steel, Polished.....\$ doz \$2.25  
Cast Iron, Steel Points.....\$ doz \$3.00  
Socket.....\$ doz \$1.75  
Bullard's.....25&25&10&10

**Carpet Sweepers**—  
Nickel.....\$ doz \$17.00  
Bissell No. 5.....\$ doz \$19.00  
Bissell No. 7 New Drop Pan.....\$ doz \$36.00  
Grand Rapids.....\$ doz \$24.00  
Crown Jewel, No. 1.....\$18.00; No. 2.....\$19.00; No. 3.....\$20.00  
Magie.....\$ doz \$15.00  
Jewel.....\$ doz \$17.00  
Improved Parlor Queen.....\$ doz \$27.00  
Jannet.....\$ doz \$24.00  
Excelior.....\$ doz \$22.00  
Garland.....\$ doz \$18.00  
Parlor Queen.....\$ doz \$24.00  
Queen.....\$ doz \$15.00  
Housewife's Delight.....\$ doz \$16.00  
Queen, with band.....\$ doz \$18.00  
King.....\$ doz \$18.00  
Weed, Improved.....\$ doz \$18.00  
Hub.....\$ doz \$16.00  
Cog-Wheel.....\$ doz \$16.00  
Conqueror.....\$ doz \$22.00  
Easy.....\$ doz \$22.00  
Monarch.....\$ doz \$22.00  
Goshen.....\$ doz \$18.00  
Advance.....\$ doz \$21.00  
Ladies' Friend, No. 1.....\$ doz \$15.00; No. 2.....\$ doz \$15.00  
American.....\$ doz \$35.00  
Grand Republic.....\$ doz \$35.00

**Cartridges**—  
See Ammunition.  
**Casters**—  
Bed.....Brass.....55&55&17  
Plate.....Others.....60&60&10  
Shallow Socket.....40&10  
Deep Socket.....40&10  
Yale Casters, list May, 1888.....30&10&40  
Yale, Gem.....40&10&50  
Martin's Patent (Phenol).....45&10&50  
Payson's Anti-friction.....60&10&10  
Giant Truck Casters.....50&10  
Stationary Truck Casters.....50&10  
Socket Truck Casters.....50&10

**Cattle Leaders**—  
Humason, Beckley & Co.'s.....70%  
Sargent's.....60%&10  
Hotchkiss.....30%  
Peck, Stow & W. Co.....50&10

**Chain**—  
Trace, 6-10-2, exact.....50&10&50&10&5  
Trace, 6-10-3, exact.....50&10&50&10&5  
Trace, 7-10-2, exact.....50&10&50&10&5  
Trace, 7-10-3, exact.....50&10&50&10&5  
NOTE.—Traces, "Regular" sizes, 3¢ net  
Log, 5 ft., Sutherland, and other fancy  
Chain, list Nov. 1, 1888  
American Coil, in case lots,  
3-16 3-16 3-16 3-16 3-16 3-16 3-16 3-16  
\$8.25 5.75 5.00 4.00 3.70 3.00 3.50 3.40  
Less than case lots, add 1/4¢ per lb.  
German Coil, list of June 21, 1887  
German Halter Chain, list of June 20,  
1887.....50&10&50&10&5  
Covert Halter.....50&10&50&10&5  
Covert Traces.....35&25  
Onelida Halter Chain.....60&10&50  
Galvanized Pump Chain.....75&75&5  
Jack Chain, Iron.....75&75&5  
Jack Chain, Brass.....70&70&5

**Chalk**—  
White.....\$ gr 50¢  
Red.....\$ gr 70¢  
Blue.....\$ gr 85¢  
See also Crayons.  
**Chalk Lines**—  
See Lines.  
**Chisels**—  
Socket Framing and Firmer.  
P. S. & W.....75&10 @ 75¢  
New Haven.....10&5  
Wetherby.....10&5  
Mix.....10&5  
Ohio Tool Co.....75&75&5  
Douglass.....75&75&5  
Buck Bros.....30¢  
Merrill.....60&10&60&10  
L. & J. J. White.....30&30&5

**Tanged and Miscellaneous**.  
Tanged Firmer.....\$4.75&5.00  
Spear & Jackson's.....\$5 to \$  
Buck Bros.....30¢  
Cold Chisels.....16&19¢  
**Chucks**—  
Beach Pat.....each \$8.00.....20%  
Morse's Adjustable, each, \$7.00, 20&20&5  
Danbury.....each \$6.00, 30&30&5  
Syracuse, Balz Pat.....25%  
Skinner's Pat. Drill Chucks.....40%  
Skinner's Independent Lathe Chucks.....40%  
Skinner's Pat. Comb. Chuck.....40%

**Clamps**—  
A. I. Tool Co.'s Wrought Iron.....25%  
Adjustable, Gray's.....30%  
Adjustable, Lambert's.....30%  
Adjustable, Snow.....20%  
Adjustable, Hammers.....15%  
Adjustable, Stearn's.....20&10%  
Stearn's Adjustable Cabinet and Corner.....20&10%  
Cabinet, Sargent's.....60&10%  
Carriage Mfg. Co. Sargent's.....40&50&10  
Eberhard Mfg. Co.....40&50&10  
Warner's.....40&10&40&10&5  
Saw Clamps, see Vises

**Clips**—  
Norway, Axle, 1/2 & 5-16.....55&55&5  
2nd grade Norway Axle, 1/2 & 5-16.....55&55&5  
Superior Axle Clips.....60&5&70  
Norway Spring Bar Clips, 5-16.....60&5&5  
Wrought Iron Felloe Clips.....\$ 5¢  
Steel Felloe Clips.....\$ 5¢  
Baker Axle Clips.....25¢

**Cockeyes**.....50%

**Cocks, Brass**.....50&25

**Hardware list**.....50&25

**Coffee Mills**—  
Box and Side, list Jan. 1, 1888.....60&25  
American, Enterprise Mfg Co. 20&10&30  
The Swift, Lane Bros.....20&10

**Compasses Dividers, &c**—  
Compasses, Callipers, Dividers, 70&70&10%  
Bemis & Call Co.'s.....60&55  
Dividers.....50&55  
Compasses & Callipers.....50&55  
Wing and Inside or Outside.....50&55  
Double.....60%  
(Call's Pat. Inside).....30%  
Excelior.....50%  
J. Stevens & Co.'s.....25&10%  
Starratt's.....25&10%  
Spring Callipers and Dividers 25&10%  
Lock Callipers and Dividers.....25&10%  
Combination Dividers.....25&10%

**Coopers' Tools**—  
Bradley's.....20%  
Barton's.....20&20&5  
L. & J. J. White.....20&5  
Albertson Mfg. Co.....25%  
Bentley's.....35%  
Sandusky Tool Co.....30&30&5

**Corkscrews**—  
Humason & Beckley Mfg. Co. 40&40&10%  
Clough's Pat.....33&33&5  
Howe Bros & Hulbert.....35%

**Core Knives and Cutters**—  
Bradley's.....10%  
Wadsworth's.....25%

**Cradles**—  
Grain.....50&25

**Crayons**—  
White Crayons, \$ gr 12¢@12¢.....10%  
D. M. Stewart Mfg. Co., Metal Work-  
ers, \$ gr, \$2.50.....25%  
D. M. Stewart Mfg. Co., Rolling Mill,  
\$ gr, \$2.50.....25%  
See also Chalk.

**Crow Bars**—  
Cast Steel.....\$ 4¢  
Iron, Steel Points.....\$ 3¢

**Curry Combs**—  
Fitch's.....50&10&50&10&10%  
Rubber per doz \$10.00.....20%  
Perfect.....50%

**Curtain Pins**—  
Silvered Glass.....net  
White Enamel.....net

**Cutlery**—  
Beaver Falls & Booth's.....33%  
Wostenholme.....\$7.75 to \$

**Dampers, &c**—  
Dampers, Buffalo.....40&10%  
Buffalo Damper Clips.....40&10%  
Crown Damper.....40%  
Excelior.....40&10%

**Dividers**—  
See Compasses.

**Doz Collars**—  
Embossed, Gilt, Pope & Steven's list  
Leather, Pope & Steven's list.....40%  
Brass, Pope & Steven's list.....40%

**Door Springs**—  
Torrey's Rod, regular size.....\$ doz \$1.30  
Gray's, \$ gr, \$20.00.....20%  
Bee Rod \$ gr, \$20.00.....20%  
Warner's No. 1, \$ doz, \$2.50; No. 2,  
\$3.30.....40&10&50%  
Gem (Coil), list April 19, 1886.....10%  
Star (Coil), list April 19, 1886.....20%  
Victor (Coil).....60&10&50%  
Champion (Coil).....60&10&50%  
Philadelphia, 5 in., \$5.00; 8 in., \$7.75.....10%  
Cowell's.....No. 1, \$ doz, \$18.00; No. 2,  
\$15.00.....50%  
Rubber, complete, \$ doz, \$4.50.....55&10%  
Hercules.....50%  
Shaw Door Check and Spring, 25&30&35%

**Drawing Knives**—  
Wetherby.....75&10 @ 75¢  
Mix.....85¢  
New Haven.....60&10&60&10&5  
Merrill.....75&75&5  
Watrous.....15&10&25%  
L. & J. J. White.....20&5  
Bradley's.....35%  
Adjustable Handle.....25&35%  
Wilkinson's Folding.....25&25&5

**Drills and Drill Stocks**—  
Blacksmiths'.....each \$1.75  
Blacksmiths' Self-Feeding, each \$7.50, 20%  
Breast, P. S. & W.....40&10%  
Breast, Wilson's.....30&5  
Breast, Millers Falls.....each \$3.00, 25%  
Breast, Bartholomew's.....each \$2.50,  
25&10&40%  
Ratchet, Merrill's.....20&20&5  
Ratchet, Ingersoll's.....25%  
Ratchet, Parker's.....20&20&5  
Ratchet, Whitney's.....20&10%  
Ratchet, Weston's.....20&25%  
Ratchet, Moore's Triple Action.....25&30%  
Ratchet, Curtis & Curtis.....30%  
Whitney's Hand Drill, Plain, \$11.00,  
Adjustable, \$12.00.....20&10%  
Wilson's Drill Stocks.....10%  
Automatic Boring Tools.....\$1.75&1.85

**Twist Drills**—  
Morse.....50&10&5  
Standard.....50&10&5  
Syracuse (Metal list).....50&10%  
Cleveland.....50&10&5  
Williams.....50&10&5  
New Process.....50&10&5

**Drill Bits**—See Augers and Bits.

**Drill Chucks**—See Chucks.

**Dripping Pans**—  
Small sizes.....\$ 6 3/4¢  
Large sizes.....\$ 6 3/4¢

**Egg Beaters**—  
Dover.....\$ doz \$1.50  
National, \$ doz \$4.50.....35%  
Family (T. & S. Mfg. Co.), \$ gr \$17.00,  
\$18.00  
Duplex (Standard Co.).....\$ gr \$15.00  
Rival (Standard Co.).....\$ gr \$12.00  
Large Duplex (Standard Co.), \$ doz \$4.50  
Triumph (T. & S. Mfg. Co.), \$ gr \$10.50,  
\$11.50  
Advance, No. 1.....\$ gr \$10.50  
Advance, No. 2.....\$ gr \$10.00  
Bryant's.....\$ gr \$14.00  
Ayres' Spiral.....\$ gr \$5.00  
Double (H. & R. Mfg. Co.).....\$ gr \$16.20  
Easy (H. & R. Mfg. Co.).....\$ gr \$14.00  
Triple (H. & R. Mfg. Co.).....\$ gr \$16.20  
Spiral (H. & R. Mfg. Co.).....\$ gr \$4.50  
Paine, Diehl & Co.'s.....\$ gr \$24.00

**Egg Pouches**—  
Buffalo Steam Egg Pouches, \$ doz, No.  
1, \$6.00; No. 2, \$8.00.....25%

**Electric Bell Sets**—  
Wollensak's.....20%  
Bigelow & Dowse.....20%

**Emery**—No. 1 to No. 54 to Flour, CF  
40 gr. 150 gr. F. F.  
Kegs, \$ m.....5 1/4¢  
1/2 kegs, \$ m.....5 1/4¢  
1/4 kegs, \$ m.....5 1/4¢  
10-b cans, 10.....5 1/4¢  
In case.....6 1/4¢  
10-b cans, less  
than 10.....10 ¢ 10 ¢ 7 1/2¢

**Enameled and Tinned Ware**—  
See Hollow-Ware.

**Escatchoon Pins**—  
Iron, list Nov. 11, 1885.....50&10&50&10&5  
Brass.....60&60&5

**Escatchoons**—  
Door Lock.....Same dis as Door Locks.  
Brass Thread.....60&60&10%  
Wood.....25%

**Faucets**—  
Fenn's.....40%  
Bohren's Pat. Rubber Ball.....25%  
Bryant's Cork Stops.....33%  
Star.....60%  
Fraser's Pat. Petroleum.....40&5&25  
B. & L. B. Co.  
West's Lock, Open and Shut Key.....50%  
Star Metal Plug, new list.....40%  
Lockport, Metal Plug, reduced list.....40%  
Metallic Key, Leather Lined.....60&10%  
Cork Lined.....60&10&10%  
Burnside's Red Cedar.....60%  
Burnside's Red Cedar, bbl lots.....50&10%  
John Sommers  
Peerless Best Block Tin Key.....40%  
IXL, 1st quality, Cork Lined.....40%  
Diamond Lock.....40%  
Perfection, Fla. Red Cedar.....50%  
Goodenough Cedar.....50%  
Boss Metallic Key.....60%  
Reliable Cork Lined.....60%  
Western Pattern Cork Lined.....50%  
Self-Measuring  
Enterprise, \$ doz \$50.00.....30&10%  
Lane's, \$ doz \$36.00.....25&10%  
Victor, \$ doz \$36.00.....25&10%

**Felice Plates**—  
Derby and Cincinnati.....45&55

**Fifth Wheels**—  
Derby and Cincinnati.....45&55

**Files**—  
Domestic.....  
Nicholson Files, Rasps, &c.....60&10&60&10&5  
Nicholson (X. F.) Files.....25%  
Nicholson's Royal Files (Seconds).....75%  
(extra prices on certain sizes)  
Other makers, best brands.....60&10&60&10&10%  
Fair brands.....60&10&60&10&10%  
Second quality.....70&10&60&10&10%  
Nicholson's Horse Rasps.....60&10&60&10%  
Heller's Horse Rasps.....50&75&60&10%  
McCaffrey's Horse Rasps.....50&10%  
Cheese Horse Rasps, Hand Cut.....50&10%  
**Imported**—  
J. & Riley Carr.....list, April 1, 1883, 15¢  
J. & Riley Carr Horse Rasps.....10%  
Moss & Gamble.....list, April 1, 1883, 15¢  
Butcher.....Butcher's list, 20¢  
Stubs list, 25¢&30%  
Turton's.....Turton's list, 20¢&25%  
Greaves' Horse Rasps, American list, 60%

**Fluting Machines**—  
Knox, 4 1/2-Inch Rolls.....\$3.25 each } 35%  
Knox, 6-Inch Rolls.....\$3.60 each } 35%  
Eagle, 3 1/2-Inch Roll, \$2.15.....35%  
Eagle, 5 1/2-Inch Roll, \$2.55.....35%  
Crown, 4 1/2 in., \$3.50; 6 in., \$4.00; 8 in.,  
\$6.50 each.....35%  
Crown Jewel, 6 in.....\$3.50 each, 35%  
American, 5 in., \$3.00; 6 in., \$3.40; 7 in.,  
\$4.50 each.....35%  
Domestic Fluter.....each \$1.50  
Geneva Hand Fluter, White Metal.....\$ doz \$12, 25%  
Crown Hand Fluter, Nos. 1, \$15.00; 2,  
\$12.50; 3, \$10.00.....30%  
Shepard Hand Fluter, No. 85 \$ doz  
\$13.50.....40%  
Shepard Hand Fluter, No. 110 \$ doz  
\$11.00.....40%  
Shepard Hand Fluter, No. 95 \$ doz  
\$8.00.....40%  
Clark's Hand Fluter, \$ doz \$15.00.....35%  
Combined Fluter and Sad Iron,  
\$ doz \$15.00.....30%  
Buffalo.....\$ doz \$10.00.....10%

**Fluting Scissors**—  
Blair's.....45%

**Fodder Squeezers**—  
Blair's.....\$ doz \$2.00  
Blair's "Climax".....\$ doz \$1.25

**Forks**—  
Hay, Manure, &c., Asso. List.....65%  
Hay, Manure, &c., Phila. List 60&60&5  
Plated, see Spoons.

**Freezers, Ice Cream**—

Buffalo Champion.....65&65&5  
Shepard's Lightning.....65 @ 65&5  
White Mountain.....50&20&5  
New Arctic.....50&40&5  
American.....60%  
Gem.....65%  
Blizzard.....70%  
Double Action Crown.....60%  
Crown.....60%  
Star.....60%  
Peerless and Giant.....60%  
Zero and Pet.....65&10  
Boss.....65&10&10  
Keystone, each, \$1.50.....25%

**Fruit and Jelly Presses**—  
Enterprise Mfg. Co.....20&10&30%  
Henis.....\$ doz \$2.50  
Shepard's Queen City.....40%

**Fry Pans**—  
High List.....75&5 @ 75&10  
No.....0 3 7 8  
\$ doz, \$3.75 \$4.70 \$5.30 \$5.95 \$6.55  
No.....5 6 7 8  
\$ doz, \$7.50 \$8.75 \$10.00 \$11.25  
Low List.....65&10%  
No.....0 1 2 3 4  
\$ doz, \$3.00 \$3.75 \$4.25 \$4.75 \$5.25  
No.....5 6 7 8  
\$ doz, \$6.00 \$7.00 \$8.00 \$9.00

**Fuse**—\$ 1000 ft  
Common Hemp Fuse, for dry ground, \$2.70  
Common Cotton Fuse, for dry ground, 2.85  
Single Taped Fuse, for wet ground, 4.25  
Double Taped Fuse, for very wet gr., 5.40  
Triple Taped Fuse, for very wet gr., 6.50  
Small Gutta Percha Fuse, for water, 7.50  
Large Gutta Percha Fuse, for water, 12.00

**Gauges**—  
Marking, Mortise, &c.....60&10%  
Starratt's Surface, Center and Scratch,  
25&10%  
Wire, low list.....10&10%  
Wire, Wheeler, Madden & Co.....10%  
Wire, Morse's.....50&50&5  
Wire, Brown & Sharpe's.....10&20%

**Gimlets**—  
Nail and Spike.....50&10&5  
"Eureka" Gimlets.....40&10%  
"Diamond" Gimlets.....\$ gr \$5.00  
Double Cut, Shepardson's.....45&45&5  
Double Cut, Ives.....60&60&5  
Double Cut, Douglas's.....40&10%  
"Bee," \$ gr \$12.....25&25&5

**Glue**—  
Le Page's Liquid.....25&25&5  
Upton's Liquid.....35%  
Le Page & Co.'s Improved Process  
25&25&5

**Glue Pots**—  
Tinned.....40%  
Enameled.....40&5  
Family, Howe's "Eureka".....40%  
Family, L. F. C.'s "Handy".....50%

**Grindstones**—  
Small, at factory.....\$ ton \$7.50 @ 9.00

**Grindstone Fixtures**—  
Sargent's Patent.....70&10%  
Reading Hardware Co.....30&10%

**Hack Saws**—  
See Saws.

**Halters**—  
Covert's, Rope, 1/2-In. Jute.....50&25  
Covert's, Rope, 1/2-In. Hemp.....50&25  
Covert's Adj. Rope Halters.....40&25  
Covert's Hemp Horse and Cattle Tie,  
50&25  
Covert's Jute Horse and Cattle Ties,  
60&10&25

**Hammers**—  
Handled Hammers—  
Maydole's, list Dec. 1, '85.....25&10&35%  
Buffalo Hammer Co. (List Jan. 15, '87  
Humason & Beckley.....50&50&10%  
Atha Tool Co.....40&10&50%  
Fayette R. Plumb.....40&10&50%  
C. Hammond & Son.....40&10&60%  
Verree.....55%  
Magnetic Tack, Nos. 1, 2, 3, \$1.25, 1.50 &  
1.75.....30&10%  
Nelson Tool Works.....40&10%  
Warner & Nobles.....20&25%  
Peck, Stow & Wilcox.....40%  
Sargent's.....33%&12%  
**Heavy Hammers and Sledges**—  
3 lb and under.....\$ 40¢ 60&10  
3 to 5 lb.....\$ 36¢ 80¢ @ 70¢  
Over 5 lb.....\$ 30¢  
Wilkinson's Smiths.....10%&11%&12%

**Handcuffs and Leg Irons**—  
R. I. Tool Co., Handcuffs, \$15.00 \$ doz 10%  
R. I. Tool Co., Leg Irons, \$25.00 \$ doz 10%  
Tower's.....25%  
Daley's Improved Handcuffs: 2 Hands,  
Polished, \$ doz \$48.00; Nickelled,  
\$67.00; 3 Hands, Polished, \$ doz  
\$72.00; Nickelled, \$84.00.....25

**Handles**—  
Iron, Wrought or Cast—  
Door or Thumb.  
Nos.....0 1 2 3 4  
Per doz.....\$0.90 1.00 1.18 1.35 1.50  
Roggin's Latches.....\$ doz 30¢&35%  
Bronze Iron Drop Latches.....\$ doz 70¢ net  
Jap'd Store Door Handles—Nuts, \$1.02;  
Plate, \$1.10; no Plate, \$0.88.....net  
Barn Door, \$ doz \$1.40.....10&10%  
Chest and Lifting.....70%  
**Handles, Wood**—  
Saw and Plane.....40&10&40&10&5  
Hammer, Hatchet, Axe, Sledge, &c.....40%  
Brad Axl.....\$ gr \$2.00  
Hickory Firmer Chisel, ass'd, \$ gr 4.50  
Hickory Firmer Chisel, large, \$ gr 5.00  
Apple Firmer Chisel, ass'd, \$ gr 5.00  
Apple Firmer Chisel, large, \$ gr 6.00  
Socket Firmer Chisel, ass'd, \$ gr 3.00  
Socket Firmer Chisel, ass'd, \$ gr 5.00  
J. S. Smith & Co.'s Pat File.....50%  
File, assorted.....\$ gr 2.75 40%  
Auger, assorted.....\$ gr 5.00 40%  
Auger, large.....\$ gr 7.00 40&10%  
Pat. Auger, Ives.....\$ set \$1.25  
Pat. Auger, Douglas's.....\$ set \$1.25  
Pat. Auger, Swan's.....\$ set \$1.00  
Roe, Rake, Shovel, &c.....50&10%



**Cross-Cut Saw Handles—**  
 Atkins' No. 1 Loop, pair, 28¢; No. 3, 18¢; No. 6, 16¢; No. 2 and No. 4 Reversible, 18¢.  
 Boynton's Loop Saw Handles, 50¢... 60¢  
 Champion... 15¢

### Hangers—

Barn Door, old patterns... 60¢10¢10¢70¢  
 Barn Door, New England, 60¢10¢10¢70¢  
 Samson Steel Anti-Friction... 55¢  
 Orleans Steel... 55¢  
 Hamilton Wrought Wood Track... 55¢  
 U. S. Wood Track... 55¢  
 Champion... 60¢10¢  
 Rider and Wooster, Medina Yfg. Co.'s... 70¢  
 Hat... 70¢  
 Climax Anti-Friction... 60¢  
 Ilmax Anti-Friction for Wood Track... 55¢  
 Zenith for Wood Track... 55¢  
 ed's Steel Arm... 50¢  
 allenge, Barn Door... 50¢  
 Sterling's Improved Anti-Friction... 65¢10¢  
 Victor, No. 1, \$15.00; No. 2, \$16.50; No. 3, \$18.00... 50¢25¢  
 Cheritree... 50¢10¢  
 Kidder's... 50¢10¢60¢  
 The Boss... 60¢10¢  
 Best Anti-Friction... 60¢10¢  
 Duplex (Wood Track)... 60¢10¢55¢  
 Terry's Pat., 7 doz pr. 4 in. \$10.00; 5 in. \$12.00... 50¢55¢50¢10¢  
 Cronk's Pat., No. 4, \$12.00; No. 5, \$14.40; No. 6, \$18.00... 50¢15¢60¢  
 Wood Track Iron Clad, 7 ft. 10¢... 50¢  
 Carrier Steel Anti-Friction... 50¢50¢55¢  
 Architect, 7 set \$40.00... 20¢  
 Eclipse... 20¢10¢  
 Felix, 7 set \$4.50... 20¢  
 Richards... 30¢30¢10¢  
 Lane's Steel Anti-Friction... 50¢  
 Ball Bearing Door Hanger, 30¢10¢25¢10¢  
 Warner's Pat... 20¢20¢10¢  
 Stearns' Anti-Friction... 20¢20¢10¢  
 Stearns' Challenge... 25¢10¢25¢10¢10¢  
 Faultless... 40¢40¢55¢  
 American, 7 set \$6.00... 20¢10¢  
 Rider & Wooster, No. 1, 62¢; No. 2, 75¢... 40¢10¢  
 Paragon, Nos. 1, 2 and 3... 40¢10¢  
 Paragon, Nos. 5, 5½, 7 and 8... 20¢10¢  
 Crescent... 60¢60¢10¢  
 Nickel, Cast Iron... 50¢  
 Nickel, Malleable Iron and Steel... 40¢  
 Scranton Anti-Friction Single Strap... 40¢  
 Scranton Anti-Friction Double Strap... 40¢  
 Universal Anti-Friction... 40¢  
 Wild West, 4 in. Wheel, \$15.00; 5 in. Wheel, \$21.00... 45¢  
 Star... 40¢10¢40¢10¢55¢  
 May... 50¢55¢50¢10¢  
 Barry, \$6.00... 40¢10¢

### Harness Snaps—

See Snaps.

### Hatchets—

List Jan. 1, 1886... 35¢40¢  
 Isaiah Blood... 35¢40¢  
 Hunt's Shingling, Lath and Claw... 40¢55¢  
 Hunt's Broad... 40¢  
 Buffalo Hammer... 40¢10¢50¢  
 Hurd's... 40¢10¢50¢  
 Fayette R. Plumb... 40¢10¢50¢  
 Wm. Mann, Jr., & Co... 50¢50¢55¢  
 Underhill Edge Tool Co... 40¢50¢40¢10¢  
 Underhill's, Haines and Bright... 35¢45¢  
 C. Hammond & Son... 40¢10¢50¢  
 Simmons... 40¢10¢50¢  
 Peck's... 40¢10¢40¢10¢55¢  
 Kelly's... 50¢50¢55¢  
 Sargent & Co... 50¢  
 Ten Eyck Edge Tool Co. 40¢10¢40¢10¢55¢  
 Collins... 40¢10¢  
 Schulte, Lohoff & Co... 50¢55¢

### Hay and Straw Knives—

Lightning, Mrs. price 7 doz \$18.00, 25¢  
 But jobbers frequently give extras.  
 Gem... 7 doz \$10  
 Wadsworth's... 40¢75¢40¢10¢  
 Carter's Needle... 7 doz \$11.50¢12.00  
 Heath's... 7 doz \$13.50¢14.00  
 Auburn Hay and Straw Point... 40¢  
 Auburn, Straw... 40¢  
 Nollin's Hay... 7 doz \$10.00

### Hinges—

**Wrought Iron Hinges**  
 Strap and T... 75¢5¢75¢10¢  
 Screw Hook and... 6 to 12 in., 7 3/4¢  
 Strap... 14 to 20 in., 8 3/4¢  
 22 to 36 in., 9 3/4¢  
 6 to 12 in., 7 3/4¢  
 Heavy Welded... 14 to 20 in., 8 3/4¢  
 Hook... 22 to 36 in., 9 3/4¢  
 Screw Hook... 1/2 in., 7 doz \$1.50  
 and Eye... 1/2 in., 7 doz \$2.50  
 Rolled Blind Hinges, Nos. 32 and 34... 50¢10¢  
 Rolled Blind Hinges, Nos. 232 and 234... 55¢10¢  
 Rolled Plate... 70¢10¢  
 Rolled Raised... 70¢10¢  
 "Plate" Hinges, 10 and 12 in., 7 3/4¢  
 "Providence" 7, over 12 in., 7 3/4¢  
**Spring Hinges—**  
 Geer's Spring and Blank Butts... 40¢  
 Union Spring Hinge Co.'s list, March, 1886... 20¢  
 Acme... 30¢  
 U. S... 25¢10¢  
 Empire and Crown... 20¢  
 Hero and Monarch... 55¢  
 American, Gem, and Star... 20¢  
 Oxford... 20¢  
 Barker's Double Acting... 20¢10¢  
 Union Mfg. Co... 25¢  
 Bommer's... 30¢  
 Buckman's... 15¢20¢  
 Chicago... 30¢  
 Wiles... 10¢  
 Devore's... 40¢  
 Rex... 40¢  
 Royal... 40¢  
 Reliable... 60¢  
 Champion... 60¢  
**Gate Hinges—**  
 Western... 7 doz \$4.40, 60¢  
 N. E... 7 doz \$7.00, 50¢  
 N. E. Reversible... 7 doz \$5.20, 55¢10¢  
 Clark's, Nos. 1, 2, 3... 60¢10¢55¢  
 N. Y. State... 7 doz \$5.00, 55¢10¢  
 Automatic... 7 doz \$12.50, 50¢  
 Common Sense... 7 doz pair \$1.50, 50¢  
 Seymour's... 60¢10¢55¢  
 Shepard's... 60¢10¢55¢  
 Reed's Latch and Hinges... 7 doz \$12.00, 50¢  
**Blind Hinges—**  
 Parker... 75¢25¢  
 Palmer... 50¢55¢10¢  
 Seymour... 70¢25¢  
 Nicholson... 45¢10¢  
 Porter... 50¢

Clark's, Nos. 1, 3, 5, 40 and 50

Clark's Mortise Gravity... 75¢10¢55¢80¢  
 Sargent's, Nos. 1, 3, 5, 11, 13... 75¢10¢55¢105¢55¢  
 Sargent's, No. 12... 77¢10¢10¢  
 Reading's Gravity... 75¢10¢75¢105¢55¢  
 Shepard's... 75¢10¢55¢  
 Noiseless... 75¢10¢55¢  
 Niagara... 80¢25¢  
 Buffalo... 80¢55¢  
 Clark's Genuine Pat... 80¢55¢  
 O. S. Lull & Porter... 75¢10¢80¢  
 Acme, Lull & Porter... 75¢55¢  
 Queen City Reversible... 75¢  
 Clark's Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3... 75¢10¢25¢  
 North's Automatic Blind Fixtures, No. 2 for Wood, \$10.50; No. 3, for Brick, \$13.50... 25¢25¢

### Hoes—

#### Handled—

Garden, Mortar, &c... 65¢  
 Planter's, Cotton, &c... 65¢  
 Warren Hoe... 60¢  
 Magic... 7 doz \$4.00

#### Eye—

D. & H. Scovill... 20¢  
 Lane's Crescent Planter Pattern... 45¢55¢  
 Lane's Razor Blade, Scovill Pattern... 30¢  
 Maynard, S. & O. Pat... 45¢55¢  
 Sandusky Tool Co., S. & O. Pat... 60¢  
 Hubbard & Co., S. & O. Pat... 60¢  
 Chattanooga Tool Co., S. & O. Pat... 60¢  
 Grub... 60¢60¢10¢

### Hog Rings and Ringers—

Hill's Improved Ringers... 7 doz \$4.25  
 Hill's Old Style Ringers... 7 doz \$2.75  
 Hill's Tongues... 7 doz \$4.50  
 Hill's Rings... 7 doz bxs \$2.15¢2.25  
 Perfect Ringers... 7 doz bxs \$1.60¢1.70  
 Perfect Ringers... 7 doz \$2.15¢2.25  
 Blair's Hog Ringers... 7 doz \$2.25¢2.50  
 Blair's Hog Rings... 7 doz \$2.00¢1.00  
 Champion Rings... 7 doz \$2.00  
 Champion Rings, Double... 7 doz \$2.25  
 Brown's Ringers... 7 doz \$2.00  
 Brown's Rings... 7 doz \$1.25¢1.30

### Holisting Apparatus—

Moore's Hand Holst, with Lock... 40¢  
 Brake... 20¢  
 Moore's Differential Pulley Block... 40¢  
 Energy Mfg. Co.'s... 25¢

### Holders, File and Tool—

Balz Pat... 7 doz \$4.00, 25¢  
 Nicholson File Holders... 20¢

### Hollow-Ware—

#### Iron—

Stove Hollow-Ware—  
 Ground... 60¢60¢55¢  
 Unground... 60¢10¢60¢105¢  
 Boilers and Saucepans... 40¢55¢  
 Tinned Boilers and Saucepans... 40¢  
 Gray Enameled-Ware—  
 Stove... 45¢50¢  
 Maslin Kettles... 60¢10¢60¢105¢10¢  
 Boilers and Saucepans... 40¢55¢  
 Agate and Granite Ware, list Jan. 1, 1886... 35¢45¢  
 Rustless Hollow-Ware... 50¢50¢55¢  
 Galvanized Tea-Kettles—  
 Inch... 6 7 8 9  
 Each... 55¢ 60¢ 65¢ 75¢

#### Silver Plated—

4 mo. or 5¢ cash in 30 days.  
 Reed & Barton... 40¢55¢  
 Meriden Britannia Co... 40¢55¢  
 Simpson, Hall, Miller & Co... 40¢55¢  
 Rogers & Brother... 40¢55¢  
 Hartford Silver Plate Co... 40¢55¢  
 William Rogers Mfg. Co... 40¢55¢

#### Hooks—

**Cast Iron—**  
 Bird Cage, Sargent's list... 60¢10¢10¢  
 Bird Cage, Reading... 60¢10¢10¢  
 Clothes Line, Sargent's list... 60¢10¢10¢  
 Clothes Line, Reading list... 60¢10¢10¢10¢  
 Ceiling, Sargent's list... 55¢10¢10¢  
 Harned Reading list... 55¢10¢10¢  
 Coat and Hat, Sargent's list... 55¢10¢10¢  
 Coat and Hat, Reading... 50¢10¢50¢10¢10¢  
**Wrought Iron—**  
 Cotton... 7 doz \$1.25  
 Cotton Pat. (N.Y. Mallet & Handle W'ks)... 30¢  
 Tassel and Picture (T. & S. Mfg. Co.)... 30¢  
 Wrought Staples, Hooks, &c... 30¢  
 See Wrought Goods.

#### Wire—

Wire Coat and Hat, Gem, list April, 1886... 50¢  
 Wire Coat and Hat, Miles', list April, 1886... 45¢  
 Indestructible Coat and Hat... 45¢  
 Wire Coat and Hat, Standard... 45¢  
 Belt... 80¢80¢10¢  
**Miscellaneous**  
 Grass, No. 2, \$2.00; No. 3, \$2.25; No. 4, \$2.50  
 Nollin's Grass... 7 doz \$2.25  
 Bush... 55¢60¢  
 Whiffletree—Patent... 55¢  
 Hooks and Eyes—Malleable Iron... 70¢70¢10¢  
 Hooks and Eyes—Brass... 60¢10¢10¢  
 Fish Hooks, American... 50¢  
 Bench Hooks... See Bench Stops.

### Horse Nails—

Nos. 6 7 8 9 10  
 Ausable... 25¢25¢25¢24¢23¢  
 Clinton, Fin... 25¢10¢25¢10¢10¢  
 Essex... 25¢25¢25¢24¢23¢  
 Lyra... 25¢23¢22¢21¢20¢  
 Snowden... 25¢23¢22¢21¢20¢  
 Putnam... 23¢21¢20¢19¢18¢  
 Vulcan... 23¢21¢20¢19¢18¢17¢16¢  
 Northwest... 23¢22¢21¢20¢19¢18¢  
 Globe... 23¢21¢20¢19¢18¢20¢21¢  
 A. C... 23¢21¢20¢19¢18¢20¢21¢  
 C. B.-K... 25¢23¢22¢21¢20¢  
 Champlain... 23¢6¢25¢24¢23¢

New Haven... 28¢26¢25¢24¢23¢  
 Saranac... 23¢21¢20¢19¢18¢30¢10¢  
 Champion... 25¢23¢22¢21¢20¢  
 Capewell... 28¢26¢25¢24¢23¢  
 Star... 23¢21¢20¢19¢18¢  
 Anchor... 23¢21¢20¢19¢18¢35¢  
 Western... 23¢21¢20¢19¢18¢40¢10¢  
 Empire Bronze... 14¢  
**Horse Shoes—See Shoes Horse.**

### Hose, Rubber—

Competition... 75¢10¢75¢105¢  
 Standard... 70¢70¢105¢  
 Extra... 80¢60¢105¢  
 N. Y. B. & P. Co., Para... 30¢105¢  
 N. Y. B. & P. Co., Extra... 50¢  
 N. Y. B. & P. Co., Dundee... 60¢105¢

### Huskers—

Blair's Adjustable... 7 gr 88.00  
 Blair's Adjustable Clipper... 7 gr 7.00

### Indurated Fiber-Ware—25¢.

Spittoons, No. 2, 7 doz... 30.00  
 Basins, Ringed, 7 doz, No. 1, \$4.80; No. 2, \$4.20; No. 3... 33.00  
 Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), 7 doz... 37.50  
 Keelers, Nested, Nos. 1, 2, 3 and 4 (4 pieces), 7 doz... 33.70  
 Butter Bowls 16, 17 and 19-inch (3 pieces), 7 doz... 22.25  
 Liquid Measures, pt., qt., 2 qt. and funnel (4 pieces) 7 set... 24.00  
 Dry Measures, 1, 2, 4, 8 and 16 qt. (4 pieces), 7 set... 33.00  
 See also *Putis*.

### Jack Screws—See Screws.

**Kettles—** Spun, Stamped.  
 Brass, 7 to 17 in., 7 21¢  
 Brass larger than 17 in., 20¢ 23¢  
 Enameled and Tea Kettles. See *Hollow-Ware*.

### Keys—

Lock Ass'n list Dec. 30, 1886... 50¢105¢  
 Eagle, Cabinet, &c... 30¢55¢  
 Hotchkiss' Brass Blanks... 35¢55¢  
 Hotchkiss' Brass and Tinned... 40¢  
 Hotchkiss' Pad. and Cab... 35¢  
 Ratchet Bed Keys... 7 doz \$4.00, 15¢  
 Wollensak Tinned... 50¢105¢

### Knife Sharpeners—

Parkin's...  
 Applewood Handles... 7 doz \$6.00, 40¢  
 Rosewood or Cocobolo... 7 doz \$9.00, 40¢

### Knives—

Wilson's Butcher Knives... 25¢30¢  
 Ames' Butcher Knives... 25¢  
 Foster Bros' Butcher, &c... 40¢  
 Nichols' Butcher Knives... 40¢  
 Ames' Shoe Knives... 30¢25¢  
 Ames' Bread Knives... 7 doz \$1.50, 15¢20¢  
 Moran's Shoe and Bread... 30¢  
 Hay and Straw... See Hay Knives.  
 Table and Pocket... See Cutlery.  
 Corn, Auburn Mfg. Co. Western Pat... \$2.00  
 Corn, Auburn Mfg. Co. Crescent... \$3.50

### Knobs—

Door Mineral... 65¢68¢  
 Door Por. Jap'd... 75¢78¢  
 Door Por. Nickel... \$2.00¢2.25  
 Door Por. Plate Nickel... \$2.00¢2.25  
 Drawer, Porcelain... 60¢10¢60¢105¢  
 Hemacite Door Knobs... 40¢10¢50¢  
 Yale & Towne Wood, list Dec. 1885... 40¢  
 Furniture Plain... 75¢ gro inch... 40¢  
 Furniture Wood Screws... 25¢10¢  
 Base, Rubber Tip... 70¢105¢  
 Picture, Judd's... 30¢10¢10¢70¢  
 Picture, Sargent's... 70¢10¢  
 Picture, Hemacite... 35¢55¢  
 Shutter, Porcelain... 65¢10¢  
 Carriage, Jap... 7 gro 80¢, 60¢10¢

### Ladies—

Melting, Sargent's... 55¢10¢  
 Melting, Reading... 35¢10¢  
 Melting, Monroe's Pat... 7 doz \$4.00, 40¢  
 Melting, P. S. & W... 35¢10¢40¢  
 Melting, Warner's... 30¢

### Lawn Mowers—

Standard list... 50¢105¢  
 Quaker City... 60¢105¢  
 Enterprise... 60¢105¢

### Lanterns—

**Tubular—**  
 Plain with Guards, 7 doz... \$4.00¢4.25  
 Lift Wire, with Guards... \$4.50¢4.75  
 Square Plain, with Guards... \$4.00¢4.25  
 Sq. Lift Wire, with Guards... \$4.25¢4.50  
 Without Guards, 25¢ 7 doz less.  
**Miscellaneous**  
 Police, Small, \$6.00; Medium, \$7.25; Large, \$8.75... 20¢25¢

### Lemon Squeezers—

Porcelain Squeezed, No. 1... 7 doz \$6.00, 25¢30¢  
 Wood, No. 2... 7 doz \$3.00, 35¢  
 Wood, Common... 7 doz \$1.70¢1.75  
 Dunlap's Improved... 7 doz \$3.75, 20¢  
 Sammis... No. 1, \$5.00; No. 2, \$6; 25¢10¢  
 Jennings' Star... 7 doz \$2.50  
 The Boss... 7 doz \$2.50  
 Dean's... Nos. 1, 7 doz \$6.50; 2, \$3.35; 3, \$1.90  
 Little Giant... 50¢50¢55¢  
 King... 40¢55¢

### Lines—

Cotton and Linen Fish, Draper's... 50¢  
 Draper's Chalk... 60¢  
 Draper's Mason's Linen, 84 ft., No. 1, \$1.25; No. 2, \$1.75; No. 3, \$2.25; No. 4, \$2.75; No. 5, \$3.25... 25¢  
 Cotton Chalk... 55¢  
 Samson, Cotton, No. 4, \$2; No. 4½, \$2.50; No. 5, \$3... 10¢  
 Silver Lake, Braided, No. 0, \$6.00; No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50... 25¢  
 gro... 25¢  
 Mason's Linen, No. 3½, \$1.50; No. 4, \$2.00; No. 4½, \$2.50... 15¢  
 Mason's Colored Cotton... 15¢  
 Wire Clothes... Nos. 18 19 20  
 \$3 60 \$3.00 \$2.5

Ventilator Cord, Samson Braided, White or Drab Cotton... 7 doz \$7.50, 20¢

### Locks, &c.—

**Door Locks, Latches, &c.**  
 List Dec. 30, '86, chgd Feb. 2, '87... 50¢10¢60¢105¢  
 R. & E. Mfg. Co., list Mar. 20, 1889... 60¢105¢  
 Mallory, Wheeler & Co., list July, '88... 50¢10¢60¢105¢  
 Sargent & Co., list Aug. 1, '88, 15¢25¢  
 Reading Hardware Co., list Feb. 2, '88... 55¢60¢105¢  
**Note.**—Lower net prices often made.

Perkins' Burglar Proof... 60¢25¢  
 Plate... 35¢25¢  
 F. May's "Extension Cylinder" \$10.50  
 7 doz...  
 Barnes Mfg. Co... 40¢40¢105¢  
 Yale... net prices  
 Deltz Flat Key... 30¢  
 L. & C. Round Key Latches... 30¢105¢  
 L. & C. Flat Key Latches... 35¢105¢  
 Romer's Night Latches... 15¢  
 Shephardson or U. S... 40¢105¢  
 Felter or American... 40¢105¢  
 Seed's N. Y. Hasp Lock... 25¢

### Cabinet—

Eagle, Gaylord Par- } list March, '84, rev  
 ker and Corbin... } Jan. 1, '85... 33¢55¢  
 Deltz, Nos. 30 to 39... 40¢  
 Deltz, Nos. 51 to 63... 40¢  
 Deltz, Nos. 86 to 96... 30¢  
 Stoddard Lock Co... 30¢33¢55¢  
 "Champion" Night Latches... 40¢  
 Barnes Mfg. Co... 40¢40¢105¢  
 Eagle and Corbin Trunk... 25¢25¢  
 Dry "Champion" Cab. and Combin... 35¢45¢  
 Yale... net prices  
 Romer's... 25¢

### Padlocks—

List Dec. 23, '84... 75¢75¢105¢  
 Yale Lock Mfg. Co.'s... net prices  
 Eagle... 25¢25¢  
 Eureka, Eagle Lock Co... 40¢25¢  
 Romer's, Nos. 0 to 91... 30¢  
 Romer's Scandinavian, &c., Nos. 100 to 505... 15¢  
 A. E. Deltz... 40¢  
 Champion Padlocks... 40¢  
 Hotchkiss... 30¢  
 Star... 45¢  
 Horseshoe... 40¢40¢105¢  
 Barnes Mfg. Co... 40¢40¢105¢  
 Nock's... 30¢  
 Brown's Pat... 25¢  
 Scandinavian... 90¢90¢105¢  
 Fralm's Pat. Scandinavian low list... 60¢  
 Ames Sword Co. up to No. 150... 40¢  
 Ames Sword Co. above No. 150... 50¢

### Lumber Tools.

Ring Peavies, "Blue Line"... 7 doz \$20.00  
 Ring Peavies, Common... 7 doz \$18.00  
 Steel Socket Peavies... 7 doz \$21.00  
 Mall. Iron Socket Peavies... 7 doz \$19.00  
 Cant Hooks, "Blue Line"... 7 doz \$16.00  
 Cant Hooks, Common Finish... 7 doz \$14.00  
 Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish... \$16.00  
 Cant Hooks, Mall. Socket Clasp, Common Finish... 7 doz \$14.50  
 Cant Hooks, Clip Clasp, "Blue Line" Finish... 7 doz \$14.00  
 Cant Hooks, Clip Clasp, Common Finish... 7 doz \$12.00  
 Hand Spikes... 7 doz 6 ft., \$15.00; 8 ft., \$20.00  
 Pike Poles, Pike & Hook, 7 doz, 12 ft., \$11.50; 14 ft., \$12.50; 16 ft., \$14.50; 18 ft., \$17.50; 20 ft., \$21.50  
 Pike Poles, Pike only, 7 doz, 12 ft., \$10.00; 14 ft., \$11.00; 16 ft., \$13.00; 18 ft., \$16.00; 20 ft., \$20.00  
 Pike Poles, not ironed, 7 doz, 12 ft., \$6.00; 14 ft., \$7.00; 16 ft., \$9.00; 18 ft., \$12.00; 20 ft., \$16.00  
 Setting Poles, 7 doz, 12 ft., \$14.00; 14 ft., \$15.00; 16 ft., \$17.00  
 Swamp Hooks... 7 doz \$18.00

### Lustra—

Four-ounce Bottles... 7 doz, \$1.75; 7 gross... \$17.00

### Mallets—

Hickory... 20¢10¢20¢10¢105¢  
 Lignumvitae... 20¢10¢20¢105¢  
 B. & L. Block Co., Hickory & L. V... 30¢30¢105¢

### Match Safes—

Dangerfield's Self-Igniting... 7 doz \$1.5

### Mattocks, Regular list... 50¢105¢60¢

### Meat Cutters—

Dixon's 7 doz... 40¢55¢  
 Nos... 1 2 3  
 \$14.00 \$17.00 30.00  
 Woodruff's 7 doz... 40¢55¢  
 Nos... 100 150  
 \$15.00 \$18.00  
 Champion 7 doz... 40¢45¢  
 Nos... 200 300 400  
 \$22.00 \$27.00 40.00  
 Hales Pattern 7 doz... 70¢70¢55¢  
 Nos... 11 12 13  
 \$27.00 \$33.00 \$45.00  
 American... 30¢  
 Nos... 1 2 3 4 B 5  
 Each... \$5 \$7 \$10 \$25 \$50 \$60

**Molasses Gates—**  
Stebbin's Pat. 70x70x71 1/2  
Stebbin's Genuine 60x10x10 1/2  
Stebbin's Tinned Ends 40x10x10  
Chase's Hard Metal 50x10x10  
Bush's 70x70x10  
Lincoln's Pattern 70x70x10  
Weed's 20x10x10

**Boss, # doz.**  
Nos. 1, 2; No. 2, 3; No. 3, 4; No. 4, 5  
\$10.00 60x10x10 1/2

**Money Drawers—** # doz, \$18x20

**Muzzles—**  
Safety # doz, \$3.00, 25¢

**Nails, see Trade Report.**

**Wire Nails, Papered.**  
Association list, July 15, 1889.

**Tack Mfrs' list.** 70x10x10 to 70x10x10 1/2

**Wire Nails, Standard Penny.** 70x10x10 1/2

**Card June 1, '89, base.** \$2.40x2.50

**Nail Puller—**  
Curtiss Hammer # doz \$9.00

**Giant, No. 1.** # doz \$30.00, 10¢

**Pelican.** # doz \$9.00, 25¢

**Boss.** # doz \$30.00, 30¢

**Lightning.** # doz \$21.00

**Nail Sets—**  
Square # gr, \$4.00x\$4.25

**Round.** # gr, \$3.25

**Cannon's Diamond Point.** # gr, \$12, 20¢

**Not Crackers—**  
Table (H. & B. Mfg. Co.) # doz \$4.00

**Blake's Pattern.** # doz \$2.00, 10¢

**Turner & Seymour Mfg. Co.** # doz \$5.00

**Nuts—**  
Nuts, off list Jan. 1, 1888: Square, Hex.

**Hot Pressed.** 5.4¢ 5.9¢

**Cold Punched.** 5.4¢ 5.5¢

**In lots less than 100 lb.** # lb, add 1/2¢; 1-lb boxes, add 1¢ to list.

**Onkum—**  
Government # lb 7 1/2 @ 8¢

**U. S. Navy.** # lb 6 1/2 @ 7¢

**Navy.** # lb 5 1/2 @ 6 1/2¢

**Oilers—**  
Zinc and Tin 65x65x10 1/2

**Brass and Copper.** 50x10x10 1/2

**Malleable, Hammers Improved, No. 1.** \$3.60; No. 2, \$4.00; No. 3, \$4.40

**Malleable, Hammers, Old Pattern, same list.** 10x10x10 1/2

**Prior's Pat. or "Paragon" Zinc.** 80x10x10 1/2

**Prior's Pat. or "Paragon" Brass.** 50x10x10 1/2

**Olmstead's Tin and Zinc.** 60x10x10 1/2

**Olmstead's Brass and Copper.** 50x10x10 1/2

**Broughton's Zinc.** 60x10x10 1/2

**Broughton's Brass.** 50x10x10 1/2

**Gem P. D. & Co.** # gro. \$2

**Packing, Steam—**  
Rubber—

**Standard.** 60x10x10 1/2

**Extra.** 50x10x10 1/2

**N. Y. B. & P. Co., Standard.** 60x10x10 1/2

**N. Y. B. & P. Co., Empire.** 70x10x10 1/2

**N. Y. B. & P. Co., Salamander.** 70x10x10 1/2

**Jenkins' Standard.** # lb 65¢, 30¢

**Miscellaneous—**  
American Packing 10¢x11¢ # lb

**Russia Packing.** 14¢ # lb

**Italian Packing.** 13¢x14¢ # lb

**Cotton Packing.** 15¢x17¢ # lb

**Jute.** 7¢x8¢ # lb

**Padlocks—**  
See Locks.

**Pails—**  
Galvanized Iron—

**Quarts.** 10 12 14

**Hill's Light Weight.** # doz \$2.75 3.00 3.25

**Hill's Heavy Weight.** # dz. 3.00 3.25 3.75

**Whitman's.** 2.75 3.00 3.25

**Sidney Shephard & Co.** 2.80 3.00 3.40

**Iron Clad.** 2.75 3.00 3.25

**Fire Buckets.** 2.75 3.25 3.50

**Buckets, see Well Buckets.**

**Indurated Fibre Ware—25¢**  
Star Pails, 12 qt. # doz \$6.00

**Fire, Stable and Milk, 14 qt. # doz \$7.80**

**Standard Fibre Ware—**  
Plain. Deer'd

**Water Pails, 12 qt., per doz.** \$4.00 \$4.50

**Dairy Pails, 14 qt., per doz.** 4.50 5.00

**Fire Pails, No. 1, 12 qt., per doz.** 5.00

**Fire Pails, No. 2, 14 qt., per doz.** 4.50

**Pencils—**  
Faber's Carpenters' # high list 50¢

**Faber's Round Gilt.** # gro \$5.25

**Dixon's Lead.** # gro \$4.50

**Dixon's Lumber.** # gro \$6.75

**Dixon's Carpenters'.** 40x10x10 1/2

**Picks—**  
Railroad or Adze Eye, 5 to 6, \$12.00;

6 to 7, \$13.00. 50x10x10 1/2 @ 60¢

**Picture Nails—**  
Brass Head, Sargent's list 50x10x10 1/2

Brass Head, Combination list 50x10x10 1/2

Porcelain Head, Sargent's list 50x10x10 1/2

Porcelain Head, Combination list 40x10x10 1/2

Niles' Patent 40x10x10 1/2

**Pinking Irons—** # doz 65¢ net

**Pipe, Wrought Iron—**  
List March 23, 1887.

1 1/2 and under, Plain 50¢

1 1/2 and under, Galvanized 42¢

1 1/2 and over, Plain 62¢

1 1/2 and over, Galvanized 50¢

Boiler Tubes, Iron 52¢

2 in. and larger 57¢

**Planes and Plane Irons—**  
Wood Planes—

Molding 50x10x10 1/2

Scotch, First Quality 60x10x10 1/2

Bench, Second Quality 60x10x10 1/2

Bailey's (Stanley R. & L. Co.) 40x10x10 1/2

**Iron Planes—**  
Bailey's (Stanley R. & L. Co.) 40x10x10 1/2

Miscellaneous Planes (Stanley R. & L. Co.) 20x10x10 1/2

Victor Planes (Stanley R. & L. Co.) 20x10x10 1/2

Steer's Iron Planes 35x35x5 1/2

Meriden Mal. Iron Co.'s 30x10x10 1/2

Davis's Iron Planes 30x10x10 1/2

Birmingham Plane Co. 50x50x5 1/2

Gage Tool Co.'s Self-Setting 20x10x10 1/2

Thaplin's Iron Planes 40x40x5 1/2

Sargent's 30x10x10 1/2

**Plane Irons—**  
Plane Irons 20x10x10 1/2

Plane Irons, Butcher's 50x50x5 1/2

Plane Irons, Buck Bros 30x10x10 1/2

Plane Irons, Auburn Tool Co., "This-  
tle" 40x10x10 1/2

Sandusky Tool Co. 30x10x10 1/2

Double 40x10x10 1/2

L. & J. White 25x10x10 1/2

**Pliers and Nippers—**  
Button's Patent 30x10x10 1/2

Hall's No. 2, 5 in. \$13.50; No. 4, 7 in. \$21.00

# doz 20x10x10 1/2

Humason & Beckley Mfg. Co. 50x50x10 1/2

Gas Pliers, Custar's Nickel Plated 60x10x10 1/2

Eureka Pliers and Nippers 60x10x10 1/2

Russell's Parallel 25x10x10 1/2

P. S. & W. Cast Steel 50x10x10 1/2

P. S. & W. Tinner's Cutting Nippers, add 6¢ dis 10¢

Carew's Pat. Wire Cutters 20x10x10 1/2

Morrill's Parallel, # doz \$12.00 30x5 1/2

Cronk's 8 in. \$15.00; 10 in. \$21.00 40x40x5 1/2

**Plumbs and Levels—**  
Regular List 70x10x10 1/2

Disston's 45x10x10 1/2

Pocket Levels 70x10x10 1/2

Davis Iron Levels 30x10x10 1/2

Davis' Inclination 10x10x10 1/2

**Polish, Metal.**  
Prestoline 20x10x10 1/2

Krestoline Paste 33x5 1/2

Gaston's Silver Compound 33x5 1/2

**Pokes, Animal—**  
Bishop's I. X. L. # doz \$6.50

Bishop's O. K. # doz \$5.50

Bishop's Pioneer # doz \$5.75

Bishop's American # doz \$3.00

**Poppers, Corn—**  
Round or Square, 1 qt. # gr \$12.00x15.00

Round or Square, 2 qt. # gr \$25.00x26.00

**Post Hole and Tree Augers and Diggers—**  
Samson Post Hole Digger, # doz \$36.00.

Fletcher Post Hole Augers, # doz \$30, 20¢

Eureka Diggers # doz \$16.00x17.00

Leed's # doz \$8.00x9.00

Vaughan's Post Hole Auger, # doz \$13.00x14.00

Kohler's Little Giant # doz \$15.00

Kohler's Hercules # doz \$18.00

Schneider # doz \$18.00

Ryan's Post Hole Diggers # doz \$24.00

Cronk's Post Bars, # doz \$60.00.

Gibbs Post Hole Digger, # doz \$30.00, 50¢

Imperial, # doz \$15.00 45x10x10 1/2

**Potato Parers—**  
White Mountain # doz \$5.00x5.50

Antrim Combination # doz \$8.00

Hoosier # doz \$13.50

**Pruning Hooks and Shears—**  
Disston's Combined Pruning Hook and Saw # doz \$18.00, 20x10x10 1/2

Disston's Pruning Hook, # doz \$12.00.

E. S. Lee & Co.'s Pruning Tools 40x10x10 1/2

Pruning Shears, Henry's Pat. # doz \$3.75x4.00

Henry's Pruning Shears, # doz \$4.25x4.50 net

Wheeler, M. & C. Co.'s Combination, # doz \$12.00, 20x10x10 1/2

Dunlap's Saw and Chisel, # doz \$8.50, 30x5

J. Mallinson & Co., No. 1, \$5.25; No. 2, 7.25

**Pulleys—**  
Hot House, Awning, &c. 60x10x10 1/2

Japanned Screw 60x10x10 1/2

Brass Screw 60x10x10 1/2

Japanned Slide 60x10x10 1/2

Japanned Clothes Line 60x10x10 1/2

Empire Sash Pulley 55x60x4

Moore's Sash, Anti-Friction 50x10x10 1/2

Hay Fork, Solid Eye, # doz \$8.50, 50x10x10 1/2

Hay Fork, "Anti-Friction," 5 in. Solid, \$5.70

Hay Fork, "F" Common and Pat. \$5.70

Bushed 20x10x10 1/2

Hay Fork, Tarbox Pat. Iron 20x10x10 1/2

Hay Fork, Reed's Self-Lubricating 60x10x10 1/2

Shade Rack 45x10x10 1/2

Tackle Blocks. See Blocks

Moore's Anti-Friction 5 in. Wheel, # doz \$12.00.

**Pumps—**  
Cistern, Best Makers 50x10x10 1/2

Pitcher Spout, Best Makers 50x10x10 1/2

Pitcher Spout, Cheaper Goods 70x10x10 1/2

**Punches—**  
Saddlers' or Drive, good, # doz. 90x25¢

Bemis & Call Co.'s Cast Steel Drive 50x5 1/2

Bemis & Call Co.'s Springfield Socket 50x5 1/2

Spring, good quality # doz \$2.50x2.60

Spring, Leach's Pat. 15x10x10 1/2

Bemis & Call Co.'s Spring and Check 40x10x10 1/2

Solid Tinner's # doz \$1.44, 55x10x10 1/2

Tinner's Hollow Punches 30x25 1/2

Rice Hand Punches 15x10x10 1/2

Avery's Revolving 40x10x10 1/2

Avery's Saw-Set and Punch. See Saw Sets.

**Rail—**  
Sliding Door, Wrt Brass, # lb 35¢ 15x10x10 1/2

Sliding Door, Bronzed Wrt Iron, # ft 7¢

Sliding Door, Iron, Painted, # foot 4¢

Barn Door, Light In. # doz \$2.00, 25x10x10 1/2

Per 100 feet \$2.15 2.70 3.25 net

Victory's Wrought Iron, # foot \$4.65x5¢

Victory Track Rail, 7¢ # foot 50x25 1/2

Carrier Steel Rail, # foot 4¢

Moore's Wrought Iron 25x10x10 1/2

**Rakes—**  
Cast Steel, Association goods 65x10x10 1/2

Cast Steel, outside goods 60x10x10 1/2

Malleable 70x70x5 1/2

Gibbs Lawn Rake 50x10x10 1/2

Canton Lawn Rake \$9.00, 50x10x10 1/2

Ft. Madison Prize Bow Brace and Peerless 65x10x10 1/2

Fort Madison Steel Tooth Lawn Rake, \$6.00. 25x10x10 1/2

**Razors—**  
J. R. Torrey Razor Co. 20x10x10 1/2

Wostenholme and Butcher, \$10.00 to 2, 10x10x10 1/2

**Razor Straps—**  
Genuine Emerson 60x60x5 1/2

Imitation # doz \$2.00, 20x10x10 1/2

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<b>Machine-</b>	
Flat Head, Iron.....	55¢
Round Head, Iron.....	50¢
<b>Bench and Hand-</b>	
Bench, Iron.....	55¢10¢55¢10¢10¢
Bench, Wood, Beech.....	20¢
Bench, Wood, Hickory.....	20¢10¢
Hand, Wood.....	25¢10¢25¢10¢5¢
Lag, Blunt Point, according to size.....	80¢80¢5¢
<b>Coach and Lag, Glimet Point.....</b>	75¢
Bed.....	25¢5¢
Hand Rail, Sargent's.....	66¢10¢
Hand Rail, H. & B. Mfg. Co.....	70¢10¢75¢
Hand Rail, Am. Screw Co.....	75¢
Jack Screws, Millers Falls list.....	50¢50¢5¢
Jack Screws, P. S. & W.....	35¢
Jack Screws, Sargent.....	60¢10¢60¢10¢5¢
Jack Screws Stearns.....	40¢40¢10¢
<b>Scroll Saws-</b>	
Lester, complete, \$10.00.....	25¢
Hogers, complete, \$4.00.....	25¢
Barnes' Builders' and Cabinet Makers.....	\$15
Barnes' Scroll Saw Blades.....	35¢
<b>Seythe Snaths.....</b>	50¢2¢
<b>Shears-</b>	
American (Cast) Iron.....	75¢10¢75¢10¢5¢
Pruning..... See Pruning Hooks and Shears.	
Barnard's Lamp Trimmers.....	20¢
Tinners.....	20¢2¢
Seymour's, List, Dec., 1881.....	60¢10¢10¢60¢10¢10¢5¢
Heinisch's, List, Dec., 1881.....	60¢10¢10¢60¢10¢10¢5¢
Heinisch's Tailor's Shears.....	33¢
First quality C. S. Trimmers.....	80¢80¢10¢
Second quality C. S. Trimmers.....	80¢10¢80¢10¢10¢
Acme Cast Shears.....	10¢10¢
Diamond Cast Shears.....	10¢
Clippers.....	10¢10¢
Victor Cast Shears.....	75¢10¢75¢10¢5¢
Howe Bros. & Hulbert, Solid Forged Steel.....	40¢
Chicago Drop Forge & P. Co., Solid Steel Forged.....	60¢
Clauss Shear Co., Japaned.....	70¢
Clauss Shear Co., Nickelled, same list.....	60¢
<b>Sheaves-</b>	
<b>Sliding Door-</b>	
M. W. Co., list July, 1888.....	50¢10¢60¢5¢
R. & E., list Dec. 18, 1885.....	55¢20¢
Corbin's.....	60¢10¢25¢
Patent Roller.....	60¢10¢25¢
Patent Roller, Hatfield.....	75¢
Russell's Anti-Friction, list Dec. 18, 1885.....	60¢2¢
Moore's Anti-Friction.....	50¢
<b>Sliding Shutter-</b>	
R. & E., list Dec. 18, 1885.....	60¢10¢25¢
Sargent's list.....	60¢10¢
Reading list.....	60¢10¢10¢
<b>Ship Tools-</b>	
L. & I. J. White.....	20¢5¢
Albertson Mfg. Co.....	25¢
<b>Shoes, Horse, Mule, &amp;c.-</b>	
<b>Horse-</b>	
Burden's, Perkins', Phoenix, at factory.....	\$4.00
<b>Mule-</b>	
Add \$1 1/2 per keg to above prices.	
<b>Or, Wrought-</b>	
Ton lots.....	\$ 8 9¢
1000 lb lots.....	\$ 9 1¢
500 lb lots.....	\$ 10 1¢
<b>Shot-</b>	
(Eastern prices 2¢ off, cash, 5 days.)	
Drop, 1/2 bag, 25 lb.....	\$1.25
Drop, 1/2 bag, 5 lb.....	1.30
Buck and Chilled, 1/2 25 lb bag.....	1.50
Buck and Chilled, 1/2 5 lb bag.....	.35
<b>Shovels and Spades-</b>	
Ames' Shovels, Spades, &c., list Nov. 1, 1885.....	20¢
Norm-Jobbers frequently give 5¢ 7 1/2¢ extra on above.	
Griffith's Black Iron.....	50¢10¢
Griffith's C. S.....	60¢60¢10¢
Griffith's Solid C. S. R. R. Goods.....	20¢
Old Colony (Sanford Fork & Tool Co.) 20¢	
St. Louis Shovel Co.....	30¢30¢7 1/2¢
Hussey, Binns & Co.....	15¢25¢
Hubbard & Co.....	30¢20¢7 1/2¢
Lehigh Mfg. Co.....	50¢10¢
Payne Pettibone & Son, list January, 1886.....	30¢
Remington's (Lowman's Pat.) 30¢10¢40¢	
Rowland's, Black Iron.....	50¢10¢
Rowland's Steel.....	60¢25¢60¢10¢
<b>Shovels and Tongs-</b>	
Iron Head.....	60¢10¢60¢10¢5¢
Brass Head.....	60¢10¢10¢
<b>Skins, Thimble-</b>	
Western list.....	75¢5¢75¢10¢
Columbus Wrt. Steel, list Nov. 1, 1887, 20¢	
Coldbrookdale Iron Co.....	50¢10¢
Utica P. S. T. Skins.....	.60¢
Utica Turned and Fitted.....	.35¢
<b>Sieves-</b>	
Buffalo Metallic, S. S. & Co.....	50¢25¢10¢
Shaker (Barber's Pat.) Flour Sifters.....	20¢
Electric.....	\$ gr \$18.00
Hunter's.....	\$ gr \$21.00
Smith's Adjustable Sifters.....	\$ gr \$22.00
Smith's Adjustable Milk Strainer.....	\$ gr \$22.00
Smith's Adjustable T. & C. Strainer.....	\$ gr \$1.25
<b>Sieves, Wooden Rim-</b>	
Mesh 18, Nested, 1/2 doz.....	70¢
Mesh 20, Nested, 1/2 doz.....	85¢ \$1.00
Mesh 24, Nested, 1/2 doz.....	\$1.00 1.10
<b>States-</b>	
School, by case.....	.40¢
<b>Snaps, Harness, &amp;c.-</b>	
Anchor (T. & S. Mfg. Co.).....	.65¢
Fitch's (Bristol).....	50¢10¢
Hotchkins.....	10¢
Andrews.....	50¢
Sargent's Patent Guarded.....	70¢10¢10¢
German, new list.....	40¢10¢
Covert.....	50¢2¢
Covert, New Patent.....	50¢5¢2¢
Covert, New R. E.....	60¢10¢25¢
Covered Spring.....	60¢10¢10¢
<b>Soldering Irons-</b>	
Covert's Adjustable, list Jan. 1, 1886.....	35¢2¢

<b>Spoke Shaves-</b>	
Iron.....	45¢
Wood.....	30¢
Bailey's (Stanley R. & L. Co.).....	40¢10¢
Stearns.....	20¢10¢30¢
<b>Spoke Trimmers-</b>	
Bonney's.....	\$ doz \$10.00, 50¢
Stearns.....	20¢10¢
Ives, No. 1, \$15.00; No. 2, \$12.00 \$ doz.....	55¢10¢
Douglas.....	\$ doz \$9.00, 20¢
<b>Spoons and Forks-</b>	
<b>Tinned Iron-</b>	
Basting, Cen. Stamp. Co.'s list.....	70¢10¢
Solid Table and Tea, Cen. Stamp. Co.'s list.....	70¢10¢
Buffalo S. S. & Co.....	53¢2¢
<b>Silver-Plated-(4 mos. or 5¢ cash 30 days.)</b>	
Meriden Brit. Co., Rogers.....	50¢
C. Rogers & Bros.....	50¢
Rogers & Bros.....	50¢
Reed & Barton.....	50¢
Wm. Rogers Mfg. Co.....	50¢10¢60¢
Simpson, Hall, Miller & Co.....	50¢10¢
Holmes & Edwards Silver Co.....	60¢60¢5¢
L. Boardman & Son.....	50¢10¢
<b>Miscellaneous</b>	
Holmes & Edwards Silver Co.....	50¢10¢5¢
No. 67 Mexican Silver.....	50¢10¢5¢
No. 30 Silver Metal.....	50¢10¢5¢
No. 24 German Silver.....	50¢10¢5¢
No. 50 Nickel Silver.....	50¢
German Silver.....	50¢50¢5¢
German Silver, Hall & Elton.....	50¢5¢ cash
Nickel Silver.....	50¢5¢10¢10¢5¢ cash
Britannia.....	.60¢
Boardman's Nickel Silver.....	.50
Boardman's Britannia Spoons, case lots.....	.60
<b>Springs-</b>	
Elliptic, Concord, Platform and Half Scroll.....	60¢60¢5¢
Cliff's Bolster Springs.....	25¢
<b>Squares-</b>	
Steel and Iron.....	75¢10¢80¢
Nickel-Plated.....	fulcrs, ex. 1¢
Try Square and T Bevels.....	60¢10¢60¢10¢
Disston's Try Square and T Bevels.....	45¢10¢
Winterbottom's Try and Miter.....	30¢10¢
Starrett's Micrometer Caliper Squares.....	40¢
Avery's Flush Bevel Squares.....	20¢
Avery's Bevel Protractor.....	50¢
<b>Standard Fibre Ware-</b>	
Per Dozen.	
Plain. Dec'd	
Wash. Basins, 10 1/2 in.....	\$2.00 \$2.25
Wash. Basins, 12 in.....	2.25
Keelers, 1 1/2 in.....	4.00
Cuspidors.....	8.00
Spittoons, "Daisy," 8 in.....	4.00
Peck Measure.....	4.00
Half-peck Measure.....	3.50
See also Falls.	
<b>Staples-</b>	
Fence Staples, Galvanized.....	Same price as B & W
Fence Staples, Plain.....	See Trd. Rep.
<b>Steelyards.....</b>	40¢10¢50¢
<b>Stocks and Dies-</b>	
Blacksmith's.....	30¢5¢30¢10¢
Butterfield's Goods.....	30¢5¢30¢10¢
Lightning Screw Plate.....	25¢30¢
Reece's New Screw Plates.....	33¢5¢40¢
Reversible Ratchet.....	30¢
<b>Stone-</b>	
Hindostan No. 1, 3/4; Axe, 3 1/4; Slips No. 1, 4 1/4.....	\$ 2 1/4
Sand Stone.....	\$ 19¢20¢
Washita Stone, Extra.....	\$ 14¢15¢
Washita Stone, No. 1.....	\$ 10¢11¢
Washita Stone, No. 2.....	\$ 36¢38¢
Washita Slips, No. 1, Extra.....	\$ 24¢25¢
Arkansas Stone, No. 1, 4 to 6 in.....	\$ 1.50
Arkansas Stone, No. 1, 6 to 9 in.....	\$ 1.85
Turkey Oil Stone, 4 to 8 in.....	\$ 1.40
Turkey Slips.....	\$ 1.00, 50¢
Lake Superior, Chase.....	\$ 31¢32¢
Lake Superior Slips, Chase.....	18¢20¢
Seneca Stone, Red Paper Brand.....	\$ 24.00
Seneca Stone, High Rounds.....	\$ 20¢25¢
Seneca Stone, Small Whets.....	\$ gr \$24.00
<b>Stove Polish-</b>	
Joseph Dixon's.....	\$ gr \$6.00, 10¢
Gem.....	\$ gr \$4.50, 10¢
Gold Medal.....	\$ gr \$6.00, 25¢
Mirror.....	\$ gr \$6.00, 10¢
Lustro.....	\$ gr \$4.75
Ruby.....	\$ gr \$3.75
Rising Sun, 5 gr lots.....	\$ gr \$5.50
Xixon's Plumbago.....	\$ gr \$5.00
Boynton's Noon Day.....	\$ gr \$5.00
Parlor Bird Stove Enamel.....	\$ gr \$5.00
Yates' Liquid.....	\$ 3 5 10 gal.....8¢
Yates Standard Paste Polish, 10 lb cans.....	\$ 80.90 .80 .70 .60
Jet Black.....	\$ gr \$3.50
Japanese.....	\$ gr \$3.50
Firestone.....	\$ gr \$2.50
Diamond O. K. Enamel.....	\$ gr \$19.00
Bonnell's Liquid Stove Polish.....	\$ gr \$9.00
Bonnell's Paste Stove Polish.....	\$ gr \$6.00
Black Eagle Benzine Paste, 5 and 10 lb cans.....	12¢
Black Jack Water Paste, 5 and 10 lb cans.....	12¢
Nickel Plate Paste.....	\$ gr \$6.00
<b>Tacks, Brads, &amp;c.-</b>	
List, Jan. 2, 1888.-(Note.-Some manufacturers are selling Tacks at slightly higher prices than those named at)	
American Iron Carpet.....	50¢80¢5¢
Steel Carpet.....	80¢80¢5¢
Swedes Iron Carpet.....	75¢75¢10¢
American Iron Cut.....	75¢75¢10¢
Swedes Iron.....	75¢5¢75¢10¢
Swedes Iron, Upholsterers.....	75¢10¢80¢
Tinned Swedes Iron.....	75¢10¢80¢
Tinned Swedes Iron, Upholsterers.....	75¢10¢80¢
Gimp and Lace.....	75¢10¢80¢
Tinned Gimp and Lace.....	75¢10¢80¢
Swedes Iron Trimmers.....	75¢10¢75¢10¢5¢
Swedes Iron Miners.....	75¢10¢75¢10¢5¢
Swedes Iron Bill Posters or Railroad.....	75¢10¢75¢10¢5¢

<b>Swedes Steel (Swedes Iron price list)</b>	
Copper Tacks.....	80¢80¢5¢
Copper Finishing, Trunk and Clout Nails.....	50¢10¢
Finishing Nails.....	70¢10¢70¢10¢5¢
Trunk and Clout Nails.....	70¢10¢70¢10¢5¢
Tinned Trunk and Clout Nails.....	70¢10¢
Basket Nails.....	70¢10¢70¢10¢5¢
Common and Patent Brads.....	70¢10¢70¢
Hungarian Nails.....	70¢10¢70¢10¢5¢
Chair Nails.....	70¢10¢70¢10¢5¢
Zinc Glaziers' Points.....	50¢50¢5¢
Clear Box Nails.....	50¢10¢50¢10¢5¢
Picture-Frame Points.....	50¢10¢50¢10¢5¢
Looking-Glass Tacks.....	50¢10¢50¢10¢5¢
Leathered Carpet.....	50¢10¢50¢10¢5¢
Brush Tacks.....	50¢10¢50¢10¢5¢
Shoe Finders, List Jan. 2, 1888, 10¢10¢	
Lining and Saddle Nails, list Jan. 1, 1886.....	10¢10¢5¢
Silvered.....	30¢10¢10¢
Japaned.....	20¢10¢10¢
Double-Pointed Tacks.....	.85¢
Wire Carpet Nails.....	50¢10¢
Wire Brads & Nails, see Nails, Wire.....	50¢10¢
Steel-Wire Brads, R. & E. Mfg. Co.'s list.....	50¢10¢
<b>Tap Borers-</b>	
Common and Rind.....	20¢10¢
Ive's Tap Borers.....	33¢5¢
Enterprise Mfg. Co.....	20¢10¢30¢
Clark's.....	33¢5¢35¢
<b>Tapes, Measuring-</b>	
American.....	25¢10¢
Spring.....	.40¢
Chesterman's, Regular list.....	25¢30¢
<b>Thermometers-</b>	
Tin Case.....	80¢80¢10¢
<b>Thimble Skins-See Skins.</b>	
<b>Ties, Bale-Steel</b>	
Standard Wire, list.....	50¢10¢5¢
<b>Tinners' Shears, &amp;c.-</b>	
Shears and Snips (P. S. & W.).....	20¢25¢
Punches, see Punches.	
Snips, J. Mallinson & Co.....	33¢5¢
<b>Tinware-</b>	
Stamped, Japaned and Placed, list Jan. 20 1887.....	75¢75¢5¢
<b>Tire Benders, Upsetters, &amp;c-</b>	
Stoddard's Lightning Tire Upsetters.....	15¢
Detroit Perfected Tire Bender.....	15¢
<b>Tobacco Cutters-</b>	
Champion.....	20¢10¢30¢
Wood Bottom.....	\$ doz \$5.00 \$5.25
All Iron.....	\$ doz \$4.25
Nashua Lock Co's \$ doz, \$18.00 50¢55¢	
Wilson's.....	55¢
Sargent's.....	\$ doz, \$24, 55¢10¢
Acme.....	\$ doz, \$20.00, 40¢
<b>Transom Lifters-</b>	
Wollensak's.....	50¢
Class 3 and 4, Bronze Iron.....	50¢
Class 3 and 4, Bronze Metal.....	25¢
Class 3 and 4, Brass.....	35¢
Skylight Lifters.....	35¢
Crown, Eagle and Shield.....	50¢
Reiter's, list Jan. 1, 1887.....	50¢10¢2¢
Brass, Real Bronze or Nickel Plate.....	30¢
Excelsior.....	50¢10¢25¢
Shaw's.....	50¢10¢
Payson's Universal.....	40¢40¢10¢
<b>Traps-</b>	
<b>Game-</b>	
Newhouse.....	35¢40¢5¢
Onedia Pattern.....	70¢70¢25¢
Game, Blake's Patent.....	40¢10¢5¢
<b>Mouse and Rat-</b>	
Mouse Wood Choker, \$ doz holes, 11¢12¢	
Mouse, Round Wire.....	\$ doz \$1.50, 10¢
Mouse, Cage, Wire.....	\$ doz \$2.50, 10¢
Mouse, Catch-em-alive.....	\$ dz \$2.50, 10¢
Mouse, Bonanza.....	\$ gr \$15.00
Mouse Delusion.....	\$ gr \$10.00, 10¢
Rat, Decoy.....	\$ gr \$10.00, 10¢
Ideal.....	\$ gr \$10.00
Cyclone.....	\$ gr \$5.25
Hotchkins Metallic Mouse, 5-hole traps, in full cases.....	\$ doz 75¢
<b>Travels-</b>	
Lothrop's Brick and Plastering.....	25¢25¢5¢
Reed's Brick and Plastering.....	15¢
Disston's Brk and Plastering.....	25¢25¢10¢
Peace's Plastering.....	25¢
Clement & Maynard's.....	20¢
Rose's Brick.....	15¢20¢
Brade's Brick and Plastering.....	25¢
Worrall's Brick and Plastering.....	20¢
Garden.....	70¢
<b>Triers-</b>	
Butter and cheese.....	25¢
<b>Trucks, Warehouse, &amp;c.-</b>	
B. & L. Block Co.'s list, '82.....	40¢
<b>Tubes, Boiler-</b>	
See Pipe.	
<b>Twine-</b>	
Flax Twine.....	BC. B.
No. 9, 1 1/4 and 1 1/2 B. Balls.....	22¢ 23¢
No. 12, 1 1/4 and 1 1/2 B. Balls.....	21¢ 22¢
No. 18, 1 1/4 and 1 1/2 B. Balls.....	18¢ 23¢
No. 24, 1 1/4 and 1 1/2 B. Balls.....	18¢ 23¢
No. 36, 1 1/4 and 1 1/2 B. Balls.....	16¢ 27¢
No. 24, Matgrass, 1 1/4 and 1 1/2 B. Balls.....	18¢50¢
Chalk Line, Cotton, 1/2 B. Balls.....	25¢
Mason Line, Linen, 1/2 B. Balls.....	55¢
2-Ply Hemp, 1/4 and 1/2 B. Balls (Spring Twine).....	11¢
3-Ply Hemp, 1 1/2 B. Balls.....	12¢12¢
3-Ply Hemp, 1 1/2 B. Balls.....	11¢11¢
Cotton Wrapping, 5 Balls to lb.....	15¢16¢
2, 3, 4 and 5-Ply Jute, 1/2 B. Balls.....	10¢
Wool.....	95¢95¢
Paper.....	13¢14¢
Cotton Batts, 6, 9, 12 and 15 lb to doz.....	18¢

Wires—

Solid Box.....

80¢60¢5¢

Parallel—

Fisher & Norris Double Screw.....

15¢10¢

Stephens.....

25¢30¢

Trunk and Clout Nails.....

20¢25¢

Parker's.....

20¢25¢

Wilson's.....

55¢

Howard's.....

40¢

Bonney's.....

40¢10¢

Millers Falls.....

40¢40¢10¢

Trenton.....

40¢50¢40¢10¢

Merrill's.....

15¢20¢

Sargent's.....

60¢10¢10¢

Backus and Union.....

40¢

Double Screw Leg.....

15¢10¢

Prentiss.....

20¢25¢

Simpson's Adjustable.....

40¢

Moore's.....

20¢

Saw Fliers—

Bonney's, Nos. 2 & 3, \$15.00.....

40¢10¢

Stearns.....

33¢10¢33¢10¢10¢

Stearns's Silent Saw Vises.....

33¢35¢

Sargent's.....

60¢10¢

Hopkins.....

\$ doz \$17.50, 10¢

Reading.....

40¢10¢

Wentworth.....

20¢10¢

Combination Hand Vises.....

\$ gr \$42.00

Cowell Hand Vises.....

20¢

Bauer's Pipe Vises.....

10¢

Wagon Boxes—

Per lb.....

2 1/2¢

Wagon Jacks—

Daisy.....

25¢

Washer Cutters—

Smith's Pat.....

\$ doz \$12.00, 20¢10¢10¢

Johnson's.....

\$ doz \$11.00, 33¢

Penny's, \$dos Pol. \$14; Jap'd, \$16.00, 55¢

Appleton's.....

\$ doz \$16.00, 60¢10¢

Bonney's.....

30¢10¢

Washers—

Size.....

5- 5-16 3/4 3/4 5/8 3/4 1

Washers.....

6 1/2 5 1/2 4 1/2 3 1/2 3 3

In lots less than 200 lb, \$ lb, add 1/4¢, 5-lb boxes 1¢ to list.

Wedges—

Iron.....

\$ lb 3 1/4¢

Steel.....

4¢

Well Buckets, Galvanized—

Hill's.....

\$ doz, 12 qt, \$4.25; 14 qt, \$4.25

Iron Clad.....

\$ doz, 14 qt, \$4.25, \$4.50

Whiting's Flat Iron Band.....

\$4.25, \$4.50

Whiting's Wired Top.....

\$ doz \$4.00, \$4.25

Well Wheels—

8 in., \$2.25; 10 in., \$2.70; 12 in., \$3.25

Wire—

Iron—

Market,

Br. & Ann., Nos. 0 to 18.....

75¢75¢10¢

Cop'd, Nos. 0 to 18.....

70¢70¢10¢

Bright, Nos. 18 to 18.....

55¢10¢

Tin'd, Tinned list Nos. 0 to 18.....

70¢

Stone,

Br. and Ann'd, Nos. 16 to 18, 72 1/2¢

75¢75¢5¢

Bright and Ann'd, Nos. 19 to 30.....

76¢

Br. and Ann'd, Nos. 27 to 30.....

80¢

Tinned.....

70¢10¢75¢

Tinned Broom Wire.....

70¢10¢75¢

Galvanized Fence.....

65¢5¢

Annealed Fence, Nos. 8 and 9.....

75¢5¢

Annealed Grape, Nos. 10 to 14.....

75¢5¢

Bright, list Jan. 18, 1894.....

30¢

Coppin, list Jan. 18, 1894.....

30¢

Barb Fence.....

See Trade Report

Wire on Spools.....

65¢

Malin's Steel and Tin'd Wire on Spools.....

40¢

Malin's Brass and Cop. Wire on Spools.....

30¢

Cast Steel Wire.....

60¢ to 2.30¢

Stubs' Steel Wire.....

\$6.00 to 2.30¢

Steel Music Wire, Nos. 12 to 30.....

55¢

Picture Wire.....

New list, 50¢

Barb Wire Safety Guards.....

\$ 1000, 90¢, 25¢

Wire Clothes' Lines, see Lines.

Wire Cloth, Netting, &c.—

Painted Screen Cloth, good quality.....

\$ 100 sq. ft., \$1.80 @ \$1.50

Galvanized Wire Netting.....

75¢75¢5¢

Wire Goods—

See Bright Wire Goods.

Wire Rope—

List May 1, 1896.....

40¢10¢

Iron.....

30¢

Cast Steel.....

40¢

Wrenches—

American Adjustable.....

40¢

Baxter's Adjustable "8".....

40¢10¢50¢

Baxter's Diagonal.....

40¢10¢50¢

Coe's Genuine.....

55¢3¢

Coe's "Mechanics".....

55¢10¢3¢

Grand Standard.....

70¢10¢

Machinists', Sterling, Wrench Co. 70¢10¢

Lamson & Sessions' Engineers'.....

60¢10¢

Lamson & Sessions' Standard.....

70¢10¢

Goes' Pattern, Wrought.....

75¢10¢5¢

Grand Agricultural.....

50¢10¢

Doughue's Engineers' Agric'l.....

@ 80¢

Sterling Wrought.....

35¢

Bemis & Call's

Pat. Combination.....

35¢

Merrick's Pattern.....

25¢

Brigg's Pattern.....

40¢5¢

Cylinder or Gas Pipe.....

40¢5¢

3 Pipe.....

40¢5¢

Alken's Pocket (Bright).....

\$6.00, 50¢10¢

The Favorite Pocket.....

\$ doz \$4.00, 40¢

Webster's Pat. Combination.....

25¢

Boardman's.....

20¢10¢

Always Ready.....

25¢5¢

Allegor.....

50¢

Doughue's Engineer.....

50¢10¢

Acme, Bright.....

80¢3¢

Acme, Nickle.....

50¢3¢

Walker's.....

55¢3¢

Diamond Steel.....

55¢3¢

Winners, Clothes—

List March 11, 1890, 25 cash.

Wrought Goods—

Staples, Hooks, &c., list Jan. 12, 1896.....

80¢20¢10¢

